REMOTE STORAGE

State of Rhode Island and Providence Plantations.

REPORT

OF THE

Rhode Island Map Commission

TO THE

GENERAL ASSEMBLY,

AT ITS

JANUARY SESSION, 1893.

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REPORT.

To the Honorable the General Assembly of the State of Rhode Island:

The Commissioners who represented the State in the negotiations with the U. S. Geological Survey, by which a contour topographical survey and map of the State have been made, and who also have had charge of the preparation and publication of a wall map and atlas from the plates of that survey, respectfully submit the following report:

The work first entrusted to the Commission was authorized by a Resolution of the General Assembly, passed March 22, 1888, as follows:

> "*Resolved*, that the Governor, with the advice and consent of the Senate, be and is hereby authorized to appoint a Commission, to consist of three citizens of this State, qualified by education and experience for such service, to confer with the Director or representative of the United States Geological Survey, and to accept its co-operation with this State in the preparation and completion of a contour topographical survey and map of this State, hereby authorized to be made. Said Commission shall serve without pay, but all their necessary expenses shall be approved by the Governor, and paid out of any money in the treasury of the State not otherwise appropriated. Said Commission shall have power to arrange with the Director or representative of the United States Geological Survey concerning this survey and map, its scale, method, execution, form, and all details of the work, in behalf of the State, and may accept or reject the plans of the work presented by the United States Geological Survey. Said Commission may expend for the completion of this work a sum not exceeding five thousand dollars, in addition to their necessary expenses before mentioned; and the State Auditor is hereby directed to draw his orders on the General Treasurer for such portions thereof as may be required from time to time, from moneys not otherwise appropriated, upon receipt of vouchers signed by said Commission."

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In accordance with this Resolution, His Excellency the Governor, John W. Davis, appointed as Commissioners Messrs. Winslow Upton of Providence, John W. Ellis of Woonsocket and David W. Hoyt of Providence. After properly qualifying, the Commission organized April 28, 1888, by the election of Mr. Hoyt, Chairman and Mr. Upton, Secretary, and the Chairman was authorized to audit all accounts. Correspondence was begun with the Director of the U. S. Geological Survey, Major J. W. Powell, who came to Providence and held a personal conference with the Commission. As a result, the following Basis of Agreement, dated June 5, 1888, was drawn up and signed by Major Powell for the U. S. Geological Survey and by the Commission for the State.

Basis of Agreement between the Commissioners of the State of Rhode Island and the Director of the United States Geological Survey for the Construction of a Topographic Map of Rhode Island.

1. The preparation of the map shall be placed under the supervision of the Director of the United States Geological Survey, who shall determine the methods of survey and map construction.

2. The work shall be based upon the triangulation of the U. S. Coast and Geodetic Survey, and wherever this is deficient it shall be supplemented by the U. S. Geological Survey.

3. The survey shall be executed in a manner sufficiently elaborate to prepare a map upon a scale of 1:62,500 exhibiting hydrography, hypsography, and public culture, and the preliminary field maps shall be on such a scale as the Director of the U. S. Geological Survey may select to secure accuracy in the construction of the final map.

4. The hypsography shall be shown by contour lines with vertical intervals of 20 feet.

5. The heights of important points, including dams, shall be determined and furnished to the Commissioners of Rhode Island.

6. The outlines of wooded areas shall be represented upon proofs of the engraved map to be furnished the Commissioners of Rhode Island.

7. For convenience, the Geological Survey shall, during the progress of the field work, pay the salaries of the persons employed therein, while the travelling, subsistence, and field expenses shall be paid for the same time by the State. For

the office work on the map the salaries shall be divided between the two agreeing parties in such a way as to equalize expenses, provided that the total cost to the State of Rhode Island of the field and office work, including the electro-copper plates mentioned in Section 10 below, shall not be more than $5000.

8. During the progress of the work, free access to the field sheets and records of the topographers and draughtsmen shall be afforded the Commissioners, for examination and criticism ; and should the said Commissioners of the State of Rhode Island deem that the work is not being executed in a satisfactory manner, then the said Commissioners may, on formal notice, terminate the agreement.

9. The resulting map shall fully recognize the co-operation of the State of Rhode Island.

10. When the work is completed, the Commissioners of Rhode Island shall be furnished by the U. S. Geological Survey with photographic copies of manuscript sheets ; and when the engraving is completed, said Commissioners shall also be furnished by said Survey with electro-copper plates of the sheets of the map, without cost to the State in excess of the $5000 appropriated by the State.

It may be remarked in explanation of this Agreement, that its general design was to secure for the State the advantages of co-operating with the U. S. Geological Survey in its purpose to furnish a topographic map of the whole country. Massachusetts and New Jersey had already united with the Government in the plan, and other states have joined in the movement since our State has done so. The cost of the survey is divided equally between the Government and the State, as far as this can be estimated in advance, but the Government guarantees to pay any excess over the estimate. The resulting map is published in sheets upon the scale 1:62,500, their boundaries determined by each 15′ of latitude and longitude.

The Commissioners secured by the Agreement several advantages, which were not included in the general plan, and which are mentioned in paragraphs 5, 6 and 10. The heights of important points were not only furnished the Commissioners, but were also engraved upon the map, which had not been done in the map of Massachusetts. Proofs of the engraved map on which wooded areas have been represented were also a valuable addition to the data of the survey, and the photographic copies of the original office sheets were of especial value in verifying the printed map.

In accordance with this Agreement, the work of survey was promptly begun by the U. S. Geological Survey, under the special supervision of Mr. Henry Gannett, Chief Geographer, and of Mr. Marcus Baker, Geographer in charge. A considerable part of the state adjacent to the state of Massachusetts had already been surveyed, and by the Agreement other portions of the state adjacent to Narragansett Bay and the Ocean were adopted with little change from the earlier survey of the U. S. Coast and Geodetic Survey. The unsurveyed portions of the State were divided among the several officers of the Geological Survey, and the field work was pushed to completion in the summer and fall of 1888. At the request of the Commission the following detailed statement of the methods employed in the work, prepared by Mr. Baker, has been furnished for publication :

"The map of Rhode Island has been made in part by means of the plane table, in part by means of traverses, and in part by compilation. These methods were combined in various ways to fit the various conditions. Primary horizontal control was had by means of the triangulation of the Coast and Geodetic Survey supplemented by a triangulation by the Geological Survey. Primary vertical control was obtained by the spirit level.

"The previous work of the Coast Survey rendered available a number of triangulation points and also a topographic map of the islands and a strip of country a mile or two wide along the coast.

"The early topographic work of the Coast Survey in Rhode Island contained no contours and the region covered by this work has accordingly been resurveyed. A considerable portion of the coast and islands had been resurveyed and contoured by the Coast Survey in recent years. The latest of this work was the resurvey of Block Island by Mr. Wm. H. Dennis, Asst. C. and G. S. in 1886. This work was taken and used without revision or change. The contour topographic work of the Coast Survey on the shores of Narragansett Bay was also used, but not until it had been revised, and the new cultural features added.

"The early uncontoured Coast Survey work was resurveyed The latest city plans of Providence and other large places were photographed to scale and then tested, revised and contoured in the field from levels furnished by the City Engineer, supplemented by additional levels obtained for the purpose.

"The triangulation executed for primary horizontal control of the map was executed by Messrs. R. U. Goode and C. F. Urquhart of the Geological Survey in May and June, 1888. This triangulation started from points located by the Coast Survey along the coast and extended landwards to cover the State. Twelve points were determined. Owing to the surface configuration and abundance of woods it was necessary to erect observing platforms at nearly all the stations. These platforms ranged from 20 to 60 feet in height. The instrument used was an eight inch direction instrument by Fauth & Co., graduated to 5′ spaces, and reading by opposite microscopes and micrometers to two seconds. No least square adjustment was made. Station marks were not made at all stations. The greatest possible accuracy was not striven for in this work, but only such as should amply suffice for a map on a scale of 1:62,500.

"The elevations on the map are elevations above mean sea level, and are based on a series of heights determined with an 18 in. Gurley Y level. 186 miles of leveling was done by Messrs. Frank Sutton and R. H. Hale, in May and June, 1888, much of it along railroads. Artificial bench marks were not established, but the height of the rail determined at all streams and road crossings, and in front of the entrances to all railway stations.

"Elevations were determined along the railroad from Providence to Stonington, connecting with city levels at Providence and with tide water at Apponaug and Stonington; also from city levels in Providence along the N. Y. and N. E. R. R. to Plainfield Junction, Conn., thence by railroad to Douglas, Mass., thence by highway to Pascoag and by railroad back to city levels in Providence; and lastly a line, chiefly by highway, was run from Wood River Junction northward to Pascoag, crossing and checking on the N. Y. and N. E. R. R. near Summit. The checks on the elevations afforded by coming to tide water, or by connecting with points previously determined, were usually within a foot, and the heights as measured have been accepted and used without adjustment or change.

"The triangulation and leveling work above described constitute the frame work upon which the topographers built up the map.

"*Methods.* The methods used by the topographers in constructing the map upon the skeleton framework above outlined may for purposes of description be conveniently grouped under three headings, to wit:

(*a*) The plane table method.
(*b*) The traverse method.
(*c*) The combination method.

(*a*) By the *plane table method* is here meant that substantially all the survey work, excepting the framework above referred to, was done by means of the plane table. Numerous objects, artificial and natural, were located on the plane table sheet by intersection and their heights determined by vertical angles. These numerous located points served as the control points in sketching in the details of the topography. The telemeter was not used in this work. The aneroid barometer was sparingly used in some parts as an aid in the sketching between vertically located points.

(*b*) By the *traverse method* is here meant that substantially all the survey work, except the framework of triangulation and spirit leveling, was done by means of measures made with gradienter and telemeter rod, chiefly along highways. Nearly all the highways and the outlines of the chief water bodies were thus traversed, directions being taken by compass, distances by the telemeter, and heights by vertical angles. These traverses were checked by the triangulation, *i. e.*, the distances between points determined by the triangulation, and the distances between the same points as measured by the telemeter were compared in order to eliminate mistakes or inaccuracies in the traverses. In connection with the traverses the topographic details along the routes of traverse were sketched, hill summits located by intersection, and heights obtained by vertical angles. The summits of the hills being located both horizontally and vertically, their forms were then sketched.

(*c*) By the *combination method* is here meant that both the foregoing methods were used.

"A tract of country of irregularly uneven or undulatory surface and fairly free from woodland affords numerous points from which the country may be seen. In such a region the plane table works advantageously. In a flat region, however, and especially if wooded, the plane table cannot be used to advantage, and resort is had to traversing.

"Taking these facts into consideration, resort was had to all the foregoing methods in making the Rhode Island map, using whatever method served best for any special part; but the work was largely done by the combination method.

"Throughout the work, free use was made of all available map material. The work of the Coast Survey, of the various railroads, city surveys, surveys of reservoirs, together with such published maps and plans as would be helpful in the work, were freely used. But no work was accepted or used without examination and approval upon the ground, with the single exception of certain recent surveys by the Coast Survey. Block Island mapped on a scale of 1:10,000, by the Coast Survey in 1886, has been accepted and used without examination or revision, as already mentioned.

"The scale adopted for the original field sheets is 1:45,000. The scale, however, of five of the sheets lying partially in Massachusetts and made in connection with the survey of that state is 1:30,000.* The precision aimed at, however, and the amount and character of the detail shown on all the originals was meant to be only such as would amply suffice for publication on the scale of 1:62,500 previously determined upon.

"The contour interval is uniformly twenty feet, and the elevations are reckoned from the mean level of the sea.

"On the original sheets the outlines of wooded areas were sketched, but not with a view to engraving them.

"From its position it so happens that Rhode Island falls upon fifteen different atlas sheets in the scheme adopted by the Geological Survey. In that scheme atlas sheets are projected with reference to parallels and meridians, irrespective of political or physical boundaries.

"Chronologically the preparation of these fifteen sheets falls in four groups, viz :—

(*a*) Five sheets, lying partly in Rhode Island and partly in Massachusetts, were made in 1885 to 1887, in connection with the topographic survey of Massachusetts. These sheets are Blackstone, Fall River, Franklin, Sakonnet and Webster. Of these, Blackstone, Franklin and Webster lie chiefly in Massachusetts. Blackstone and Webster were mapped chiefly by the plane table method, and Fall River, Franklin and Sakonnet by the traverse method of survey.

(*b*) The Block Island sheet is taken from the survey by Mr. Dennis of the Coast Survey in 1886, as already mentioned.

(*c*) The Providence sheet was made in the latter part of the season of 1887, and by the combination method of survey.

(*d*) The remaining eight sheets, Burrillville, Charlestown, Kent, Moosup, Narragansett Bay, Newport, Putnam and Stonington, were made in the field season of 1888, under a basis of agreement for co-operation between the U. S. Geological Survey and the State of Rhode Island.

"The combination method of survey was chiefly used in their preparation. The Narragansett Bay and Newport sheets were chiefly compiled from Coast Survey maps."

As stated in the above communication, the work was threefold : (1) triangulation, (2) leveling, (3) topography.

The triangulation was accomplished by occupying eleven stations. The Triangulation Map appended to this report shows the location of these stations, and Appendix A gives the latitude and longitude as determined by these observations, and also a brief description of each station, prepared by Mr. Goode, Topographer. The observed azimuths and data used in the computations, together with sketches showing more exactly the location of some of the stations, are among the documents passed over to the State by this Commission.

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* The Providence sheet, which was surveyed in 1887, was also made on the scale 1:30,000.

The leveling was done by running lines of level along railroads and highways, and the elevations thus determined were made the basis of the detailed surface survey. Appendix B contains the elevations obtained directly by the leveling, and is a valuable list of elevations above mean tide water of numerous points in the State. It was prepared by Mr. Sutton, by whom the levels were run. A map with these elevations carefully marked upon it was furnished the Commission by the U. S. Geological Survey. Levels were not run in the southern and eastern parts of the State and near Narragansett Bay, because these regions had already been covered by the U. S. Coast and Geodetic Survey and the survey of Massachusetts.

During the entire field season of 1888, there were three parties in the field, and toward the close of the season two additional parties were assigned to the work. Each party consisted of a topographer and an assistant. The following were the employees of the U. S. Geological Survey engaged in this work: Messrs. J. H. Jennings, E. B. Clark, William Kramer, R. D. Cummin, F. P. Gulliver, R. H. Stuart, W. C. Frye, J. W. Thom, W. E. Horton, J. H. Wheat, L. Sandford.

The duties of the Commission were simply to represent the State while the work was in progress. The sole responsibility for planning the survey, for the methods adopted, and for the accuracy attained was assumed by the U. S. Geological Survey. The Commissioners, however, visited the several parties in the field and examined the work as it progressed. They were always cordially received, and were convinced that the work was being done satisfactorily, within the limits of accuracy contemplated by the survey.

The field work of the survey was completed in November, 1888. It had been expected that the office work, which was done in Washington, would be completed during the winter of 1888-89, and that the plates would be engraved at once; but delays occurred beyond the power of the Commission to prevent. The proofs of the electro-copper plates were received in October, 1890, and the plates themselves the next month.

The duties of the Commission as a Survey Commission ceased with the receipt of the electros. The cost of the work to the State is given in Appendix C. In connection with this, the following statement, kindly furnished by the U. S. Geological Survey, shows the total cost of the whole work, and the part borne by the General Government and the State, respectively. It will be seen that the State paid 3 cents more than one-half the cost of the survey and office work on the map; but no account is made of the cost of engraving the copper plates, which was about $3000, nor the cost of making the electros, which was about $750. These expenses were met wholly by the U. S. Geological Survey. The appropriation of $5000 was drawn upon to the amount $4866.27, and the remainder was not used. The Commissioners served without compensation; their expenses, amounting to $215.77, as stated in Appendix C, were paid from the general treasury of the State. These expenses would have been much heavier but for the kind co-operation of the several railway and transportation companies of the State, which furnished each member of the Commission free passes during the continuance of the survey and the subsequent inspection while the map was in preparation.

Statement of the Cost of the Contour Topographical Map of Rhode Island prepared jointly by the U. S. Geological Survey and the State of Rhode Island.

"Part of the Fall River and all of the Sakonnet sheet were mapped in 1885, by Mr. S. H. Bodfish and assistants, in connection with the topographic survey of

Massachusetts. The total cost of that work in Rhode Island and Massachusetts, both field and office, including salaries, subsistence, traveling and all other expenses, was $11.25 per square mile. The area on these sheets within the State of Rhode Island is 104 square miles, which at $11.25 per square mile, cost $1170.00.

"The Rhode Island part of the Providence sheet (excepting the area between the eastern boundary and Narragansett Bay and tributaries) was surveyed by Mr. E. W. F. Natter and assistants in the Fall of 1887, at a total cost for field work (salaries, subsistence, transportation, etc.,) of........	$ 1055 24	
"The office work on the same sheet, platting and drawing, took three months at $83.33 per month,....................	250 00	
		$1305 24

"During the field season of 1888, there were paid by the U. S. Geological Survey, for salaries of persons engaged in the Rhode Island survey, as follows:

R. U. Goode and C. F. Urquhart. May 17 to July 17, ...	Triangulation.	$ 451 00	
Frank Sutton and R. H. Hale. May 18 to June 30, ...	Leveling.	225 00	
J. H. Jennings and R. H. Stuart. June 5 to October 25,............................	Topography.	666 00	
E. B. Clark, W. E. Horton and J. H. Wheat. June 9 to November 4,................	"	521 00	
Wm. Kramer, W. C. Frye and J. W. Thom. June 22 to October 31,............................	"	528 00	
			$2391 00
Total amount paid by the U. S. Geological Survey,			$4866 24

"Paid by the State of Rhode Island for the miscellaneous field expenses (traveling, subsistence, etc., etc.,) of sixteen persons engaged on the work from May 16 to November 10, 1888, as per vouchers 1 to 59 in the State Treasury, ...	$3085 67

"Paid by Rhode Island for salaries of persons engaged in the office of the U. S. Geological Survey in Washington in drawing and completing the atlas sheets ready for engraving, as per pay rolls in the State Treasury, as follows:

Pay roll for December, 1888, 6 persons, ...	$ 460 60	
" " " January, 1889, 6 "	468 50	
" " " February, 1889, 6 "	433 00	
" " " March, 1889, 5 "	418 50	
		1780 60
Total amount paid by the State of Rhode Island,..		$4866 27

"The total cost of making the survey, and drawing the maps, complete and ready for the engraver, is, therefore,... $9732 51

"Taking the area of the State to be 1085 square miles, the cost is $8.97 per square mile."

At the completion of the field work of the survey, the Commission made a report of progress to His Excellency the Governor, Royal C. Taft, which was printed as Appendix C to his annual Message to the General Assembly, presented at the January session, 1889. In this report attention was called to the necessity of providing for the publication of the map, as follows:

"The Commissioners desire to call the attention of the General Assembly to the fact that no provision has been made, either by the United States or by this State, for the publication and distribution of this map. To be of service, some arrangement should be made whereby it can be supplied, at a moderate expense, to the citizens of the State, as soon as practicable after all the plates have been received.

"In the atlas published by New Jersey, whose survey has been completed in co-operation with the U. S. Geological Survey, seventeen sheets are made to cover the entire State. The sheets overlap each other to some extent, and are evidently so arranged as to be of the greatest value for local purposes. Each sheet includes more than three times the surface of a sheet of the United States Geological Survey, but is constructed on the same scale. These maps are sold at the cost of paper and printing, for the uniform price of twenty-five cents per sheet, including postage or expressage. A somewhat similar plan, requiring five to eight sheets, might, perhaps, be adopted with advantage in this State. Each city, town and village should, as far as possible, be found entire upon some one sheet; but, to secure this, the original plates must be combined and rearranged, and adjoining sheets must be made to include the same territory, to some extent. In the atlas of the United States Geological Survey, only eight cities and towns in this State will be found entire upon one sheet. Six cities and towns will be divided into four parts each, and four distinct sheets must be consulted, for each of these six, in order to obtain a complete map of the town. The remaining towns of the State will be found upon two or three sheets. It is, therefore, evident that the form of publication requires careful attention.

"It is desirable that a wall map of the whole State should be published, in addition to the atlas form just mentioned. A map about 3½ feet by 5 feet in size would include the whole State, with Block Island in its true position, if constructed on the same scale as the engraved work of the United States Geological Survey. This could be easily arranged after all the electro-copper plates have been received, provided the State authorize some arrangement for such publication."

Upon this point, the Governor remarked in his Message :—

"The Maps engraved on electro-copper plates will be furnished when the work is completed by the United States Geological Survey, to become the property of the State. Provision should be made for their publication and distribution."

On April 18, 1889, a meeting of the Finance Committee of both Senate and House was held, which was attended by the Commissioners and others. The necessity of providing for the publication of the map, so that the citizens could obtain it at the simple cost of paper and printing and thus reap the advantage of the outlay for the original survey, was pointed out. The General Assembly on April 25, 1889, passed the following Resolution, reappointing the Commissioners as a Commission to combine and rearrange the plates of the survey for a wall map and atlas.

"*Resolved*, that the sum of thirty-five hundred dollars be and the same is hereby appropriated for the purpose of combining and rearranging, for a wall map and atlas of this State, the plates of the contour topographical survey and map of Rhode Island which are to be furnished to this State by the Director of the United States Geological Survey under a resolution passed by the General Assembly of this State, March 22, 1888; and for printing and mounting an edition of said wall map for distribution among the public schools, public libraries and members of the General Assembly of this State ; said appropriation to be expended under the direction of David W. Hoyt, John W Ellis and Winslow Upton, who are hereby appointed a Commission for the purposes aforesaid, and who shall be paid their necessary expenses and such compensation as the Governor of the State may determine; and the State Auditor is hereby directed to draw his orders on the General Treasurer for such portions of this appropriation as may be required from time to time, from any money in the treasury not otherwise appropriated, upon receipt of vouchers approved by said Commission and by the Governor of the State.

"That the Commission herein named be also hereby further authorized, with the approval of the Governor of this State, to contract with some responsible party to publish one or more editions of said wall map and atlas, for sale, in such a manner and under such conditions as will best subserve the interests of the citizens of this State."

It having been found, as the work proceeded, that the amount appropriated was not sufficient to defray the expense of the work,* an additional appropriation was authorized by the General Assembly at the January session, 1891, as follows:

"*Resolved*, that the additional sum of one thousand dollars be and the same is hereby appropriated, from any money in the Treasury not otherwise appropriated, for the purpose of combining and rearranging, for a wall map and atlas of this State, the plates of the contour topographical survey and map of Rhode Island This appropriation is in addition to a resolution passed April 25, 1889. And the State Auditor is hereby authorized to draw his orders for such sum, out of any money not otherwise appropriated."

The General Assembly, at the same session, also passed the following Resolution:

"*Resolved*, that one copy of the wall map and atlas now being prepared by the Commission on the topographical survey of the State be distributed to each member of this General Assembly, when the same is completed."

Under the authority committed to them by the Resolution given on the preceding page, the Commissioners proceeded to plan for the rearrangement of the sheets of the engraved map in two forms: a wall map and an atlas. The preparation of the former was not difficult, as the State is so small that simply combining the several sheets, without any reduction in size, made a wall map of convenient form. The Commissioners were also authorized to print a sufficient number of copies of the wall map for distribution among the public schools, public libraries and members of the General Assembly, and to arrange with a responsible party to publish the map for sale. After receiving estimates from several competent lithographers and publishers, the Commissioners, acting with the approval of His Excellency, Governor John W. Davis, awarded the contract for preparing and printing the wall map to Messrs. George H. Walker & Co., of Boston, and its mounting and publishing to Mr. J. C. Thompson, of Providence.

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* This was made necessary by a decision of the State Auditor that all the incidental expenses of the work, including the compensation of the Commissioners, should come out of the appropriation.

The task of rearranging the sheets of the original survey for publication in the form of an atlas was a very perplexing one. As the boundaries of the sheets were determined by latitude and longitude, as already explained, the State was represented on fifteen sheets; but the territory included in the eastern, northern and western sheets was largely in the adjoining states of Massachusetts and Connecticut. This necessitated making new sheets by lithography, each one of which was made up of from two to four fragments of the original sheets. It was also desirable so to arrange the boundaries of the new sheets that the several towns should be complete upon some one map, as far as possible. The arrangement of the atlas in ten sheets as published was more satisfactory than any other plan under consideration. By this plan every city and town in the State is complete on some one sheet, except seven, and only five are divided to any extent. In order to exhibit the original arrangement and also the rearrangement, two maps are appended to this report—an "Index Map of U. S. Geological Survey Sheets" and an "Index Map of Atlas Sheets."

The Commissioners also determined to make the wall map and atlas as perfect as possible and to incorporate all corrections and additions which were brought to their notice in the progress of the work. To accomplish this they procured proofs of the original engraved plates and sent them to local surveyors and others from whom most valuable suggestions were received. Acknowledgment is here gratefully made to the following gentlemen, for the assistance so generously given :

Messrs. J. B. Gardiner, E. P. Dawley, J. Herbert Shedd, E. B. Weston, Wm. H. Lawton, Jr., Charles E. Hammett, Jr., J. P. Cotton, E. W. Shedd, Guy Catlin, George H. Morrill, Walter M. Dexter, Nathan B. Lewis, John L. Kenyon, C. O. Flagg, Dexter Clark, Samuel Clark, M. W. Scholfield, J. Q. A. Gardiner.

The President and Secretary of the Commission gave their personal attention to the preparation of copy for the lithographers, to the incorporation of corrections and additions, and to the reading of proof. They also visited many places, which were stated to be incorrectly represented on the map, and decided upon the changes necessary.

Many of these corrections and additions were furnished the United States Geological Survey and made upon the original copper plates before the electrotype plates were prepared for the State. The work of correction was continued until the actual publishing of the map and atlas, and changes were made in the electrotypes to a number exceeding four hundred. Appendix D contains a list of the changes made in the electrotypes, and is given in order to show the differences between the original copper plates of the United States Geological Survey and their electrotype reproductions as corrected by the Commission. A few of the changes were made after the wall map was printed. The list does not include the numerous changes in the arrangement of names made in combining the sheets on the stones, for the wall map and atlas. It should be stated, in partial explanation of the large number of corrections, that the Narragansett Bay and Newport sheets were largely made up from surveys of the U. S. Coast and Geodetic Survey executed some years ago, and that many alterations were necessary to bring them down to date.

The water contours, showing 20 feet depth on maps of the scale 1:62,500, and 100 feet depth on the map of the scale 1:250,000, were drawn upon the stones, and have not been engraved upon the electrotype plates.

The edition of the wall map was 1950 copies, and it was issued in 1891. Of this number 1000 were mounted and distributed according to the terms of the Resolutions of the General Assembly, and copies were given to persons who had assisted in the preparation of the work. 500 copies were sold to Mr. J. C. Thompson, at the cost of paper and printing, and it was stipulated that the mounted map should be sold to the public at $2.00 each, in order that the citizens might receive the benefit of the State's outlay in the preparation of the map.

The Resolution creating the Commission made no provision for printing the atlas, but authorized the Commissioners to combine and rearrange the plates and to contract with a reliable publisher for its printing and sale. The preparation of the stones was entrusted to Messrs. Geo. H. Walker & Co., of Boston, under the same contract as the preparation and printing of the wall map. The arrangements for publication and sale were made with Mr. J. C. Thompson, who agreed to sell the atlas for $2.00 in sheets, and $3.50 bound, and who arranged with the lithographers for printing a limited edition. At the same time, the Commissioners prepared a text and indices for the atlas. It having been learned that the U. S. Geological Survey had prepared a map of one-quarter scale, viz : 1:250,000, it seemed that it would be an appreciated addition to the atlas to incorporate this map with the others. The Commissioners were able to procure electros of this map and to prepare copies for the atlas, within the appropriations already made.

While these negotiations were in progress, the General Assembly, at the January session, in 1892, passed the following Resolution :

> "*Resolved,* that a sufficient number of copies of the atlas now being prepared by the Commission on the Topographical Survey and Map of this State be printed and bound, and a copy be furnished to each of the following State offices : Secret-

ary of State, General Treasurer, State Auditor, Commissioner of Public Schools, Adjutant-General, Attorney-General, Board of State Charities and Corrections, Railroad Commissioner, Harbor Commissioners, Commissioner of Industrial Statistics, to County and District Courts, offices of Clerks of Cities and Towns, Free Public Libraries, and each member of this and the preceding General Assembly of this State; and the State Auditor is hereby directed to draw his orders on the General Treasurer for such sums, not exceeding one thousand dollars, as may be needed for the above purpose, out of any money in the treasury not otherwise appropriated, upon receipt of vouchers approved by said Commission and by the Governor of this State."

Under this Resolution, 500 copies of the atlas were printed, in the year 1892, 400 of which were bound, and distribution made, as directed. The appropriation was drawn upon to the amount of $910.12.

It having been found that the demand for the wall map exceeded the edition printed by Mr. Thompson, an exchange was made with him, based on the relative cost of wall map and atlas, by which 230 unmounted sheets of the wall map were given him and 100 unbound atlas sheets returned to the Commission.

The Commissioners, having finished the tasks assigned them, beg to call attention to the following statements and suggestions:

1. The State has now in its possession forty-eight electro-copper plates, which are of considerable value, as they may form the basis of future editions of the map. They have been placed in the custody of the Secretary of State, who has deposited them in the Safe Deposit vaults of the Rhode Island Hospital Trust Co. Forty-five of them, in sets of three each, corresponding with the three colors used, represent the fifteen sheets of the original survey, as named on the Index Map of U. S. Geological Survey Sheets accompanying this report. The other three are for the map of the State on the small scale, 1:250,000.

2. There are on hand, belonging to the State, 37 mounted copies of the wall map, 192 unmounted copies of the wall map in four sheets, 35 bound copies of the atlas and 194 sets of the sheets of the atlas as yet unbound. These have been placed

in the custody of the Commissioner of Public Schools, together with the records and papers of the Commission. Among these are fifteen sheets of the original survey on which the wooded areas of the State have been colored by hand. These have been reproduced on the scale 1:250,000 and form one of the maps inserted in this report.

3. The Commissioners suggest that the Commissioner of Public Schools, or some other State officer, be appointed custodian of this property, and have authority to distribute the printed copies of the wall map and atlas now on hand according to the future needs of the Schools, Libraries and State Offices for which these maps are primarily intended. He should also be given power to sell the unmounted sheets to the present publisher, or in some other way allow the public to purchase the map or atlas, after the present copies now on the market are exhausted.

4. The Commissioners also suggest that the officer given the custody of the property be requested to keep a careful record of errors detected in this issue of the map, and of new features, changes of name, etc., in order that they may be incorporated in future editions of the map or atlas.

Respectfully submitted,

DAVID W. HOYT,
JOHN W. ELLIS,
WINSLOW UPTON,
Commissioners.

APPENDIX A.

TRIANGULATION STATIONS.

ABSTRACT OF REPORT BY R. U. GOODE, U. S. G. S.

BEACONPOLE.

Latitude 41° 59′ 42″.47. Longitude 71° 27′ 01″.26.

A 20 ft platform was erected and the Coast Survey signal of the station of that name, which is still standing (July, 1888), was used.

WOONSOCKET.

Latitude 41° 58′ 40″.81. Longitude 71° 33′ 15″.16.

On Woonsocket Hill, in town of Smithfield, Providence County. On highest point of hill is a large rock, about 12 feet square, and about two feet east of the centre of the rock a hole was drilled and some copper wire hammered into the hole.

A 40 ft. triangular observing platform was centered over the point.

TOURTELLOT.

Latitude 41° 53′ 40″.34. Longitude 71° 39′ 16″.48.

On Tourtellot Hill, in town of Glocester, Providence County, about two miles S. E. from Chepachet. A 40 ft. observing platform was erected. Position occupied eccentric. The station is at centre of spruce tree, from which all limbs are cut and which formed one side of triangular observing platform.

ALDRICH.

Latitude 41° 50′ 23″.92. Longitude 71° 40′ 11″.00.

On north end of Chepachet Hill, in town of Scituate, Providence County. A 50 ft. observing platform was erected. Position occupied eccentric. The station is at centre of chestnut tree, from which all limbs are cut and which formed one side of triangular observing platform.

MUMFORD.

Latitude 41° 46′ 13″.10. Longitude 71° 33′ 15″.83.

On old barn belonging to Mrs. Isaac Mumford, in the town of Cranston, Providence County, and about 10 miles west of the City of Providence. A platform was built on eastern end of the barn. The station is marked by a piece of brass let into stone foundation of barn 5 ft. 3 in. from top of foundation, and station is 2 ft. 5 in. west of permanent mark.

WEAVER.

Latitude 41° 39′ 37″.21. Longitude 71° 39′ 49″.84.

On Weaver Hill, in town of Coventry, Kent County. A 50 ft. observing platform was erected. Position occupied eccentric. The station is at centre of spruce tree, from which nearly all the limbs are cut and which formed one side of the triangular observing platform.

FRANKLIN.

Latitude 41° 35′ 41″.35. Longitude 71° 33′ 56″.30.

Near Franklin's Corner, in town of Exeter, Washington County. A 60 ft. observing platform was erected. The station is at centre of an oak tree, from which all the branches are cut and which formed the lower part of one side of triangular platform.

SPENCER NO. 2.

Latitude 41° 40′ 38″.87. Longitude 71° 29′ 49″.30.

This station is in Mr. Benj. F. Dawley's pasture, town of Warwick, Kent County, just south of his house. A 24 ft. observing platform was erected.

Spencer No. 2 is 790 ft., S. 55° 46′ W., from Coast Survey station Spencer, and 10 ft. west of cross mark cut on rock.

DAWLEY.

Latitude 41° 32′ 12″.06. Longitude 71° 39′ 02″.68.

On rocky point northwest of highest point of what is known as the mountain road, in town of Richmond, Washington County. A 50 ft. observing platform was erected. 4 ft. 9 in. west of sta. († U. S. G. S.) is cut in stone. It is about a mile from corner at Phillips house to point where path leaves road, and about 200 yards along path to point opposite station, and station is about 50 yards from path. A triangular observing platform was built into an oak tree, from which nearly all limbs were cut.

SHERMAN.

Latitude 41° 30′ 16″.94. Longitude 71° 30′ 56″.19.

A 24 ft. observing platform and tripod was erected 13 ft., 2° 10′ N. of West, from Coast Survey station Sherman.

CHAMPLIN.

Latitude 41° 29′ 16″.04. Longitude 71° 46′ 47″.91.

A 24 ft. observing platform and tripod was erected 11 ft. 3 in., 10° 14′ S. of East, from Coast Survey station.

ANTHONY MILL.

Latitude 41° 41′ 47″.30. Longitude 71° 32′ 47″.82.

In town of Coventry, Kent County, village of Anthony. Point sighted was cupola of new mill in Anthony. Point was not occupied.

PINE HILL.

Latitude 41° 34′ 43″.99. Longitude 71° 37′ 40″.46.

In town of Exeter, Washington County. The object sighted to was a very high spruce tree, which stands above all surrounding objects and can be seen from a great many directions.

The point was not occupied, and there is no permanent mark.

Washington, D. C., July 31, 1888.

The Triangulation Map gives the approximate location of the above stations, and a diagram of triangulation.

APPENDIX B.

ELEVATIONS IN AND ADJACENT TO RHODE ISLAND DETERMINED WITH Y LEVEL,

BY

FRANK SUTTON, U. S. G. S.

1888.

ELEVATIONS IN RHODE ISLAND.

As a basis for the hypsometric work in Rhode Island, lines of level were run along railroads and highways to the amount of 186 miles; 134 along railroads and 52 miles along highways. The work was done by Mr. Frank Sutton, assisted by Mr. R. H. Hale. The leveling was done with a large Y level. The elevations along the railroads of all stream and road crossings were taken and furnished to the topographers as bases for their hypsometric work.

The lines were run as follows:—

From Providence, R. I., (N. E. corner of Elmwood Avenue and Sackett Street) southwestward along the N. Y. P. & B. R. R. to tide water at Greenwich Cove and thence to Stonington, Conn., tide water.

From Apponaug tide water, by highway to River Point; thence by the N. Y. & N. E. R. R. (Providence Division) to Plainfield Junction, Conn.; thence by the N. Y. & N. E. R. R. (Norwich Division) to Putnam, Conn.; thence by the N. Y. & N. E. R. R. (Main line) to Douglas, Mass.; thence by highway to Pascoag, R. I., and thence by the P. & S. R. R. to Olneyville.

From Summit Station, on the N. Y. & N. E. R. R. (Providence Division) southward to Hope Valley. (From Wood River Junction to Hope Valley run by Mr. Jennings.)

From point on railroad one mile east of Summit Station, northward over Chopmist Hill to Pascoag.

No adjustment of results has been made. The results as obtained by direct measurement have been accepted and used without change.

ELEVATIONS IN AND ADJACENT TO RHODE ISLAND.

Elevations in feet. *Datum is mean sea level.*

From Elmwood Avenue and Sackett Street, Providence, via the N. Y. P. & B. R. R. to Stonington, Conn.

Benches are top of rail unless otherwise stated.

PROVIDENCE.

N. E. Corner Elmwood Avenue and Sackett St. S. E. corner of stone bound	53.5

Elmwood Avenue, east line, at R. R. bridge. S. end of granite coping just S. of S. W. corner of last iron post	66.9

CRANSTON AND WARWICK.

Pawtuxet River. N. E. corner of bridge. Top of last bolt on fender	38.0

WARWICK.

Hills Grove Station. Opposite centre of	65.0
Greenwood Station. Opposite centre of	48.4
Apponaug Station. Opposite centre of	25.9
Apponaug River. Top of last bolt on fender of bridge over	27.2
Apponaug River under R. R. bridge. Low water in	—2.37
Cowesett Station. Opposite centre of	26.8
Baker's landing road crossing	26.8
Road crossing ¼ mile S. of Coweset	27.5
Road crossing farther south	27.9

EAST GREENWICH.

Street crossing	30.6
Street crossing	31.4
Street crossing	31.0
E. Greenwich Station. W. rail opposite centre of	31.0
London Street crossing	30.8
Street crossing	31.9
Potowomut Street crossing. E. rail at	32.7
Potowomut Station. Road crossing at	15.4
Greenwich Cove. High tide at head of (approx.)	2.9
Potowomut Station. E. rail opposite centre of	32.7

NORTH KINGSTOWN.

Old Post Road. Under bridge at crossing of	49.3
Floor of same bridge (No. 115)	65.5
Road crossing about 1000 feet S. of 16 mile post from Providence	61.1
Road crossing N. of Davisville Station	54.4
Davisville Station. Opposite centre of	54.1
Road crossing 700 feet S. of Davisville Station	54.3
Stream crossing ¾ mile S. of Davisville Station. Wagon road under bridge	55.5
Stony Lane. Under bridge at crossing of	61.1
Floor of same bridge	77 8
Ten Rod Road crossing	88 6
Wickford Junction Station. Opposite signal at centre of	90.1

Road crossing one mile S. of Wickford Junction	117.9
21st mile post from Providence. N. bolt opposite	138.1
Road crossing 2¼ miles S. of Wickford Junction. Under bridge at	163.9
Floor of same bridge	180.2
Road crossing. Exeter and Allentown	161.7
Road crossing at Slocumville Station	136.3
Slocumville Station. Opposite centre of	135.9

EXETER.

Road crossing ½ mile S. of Slocumville. (Private)	130.6
Road crossing 1 mile S. of Slocumville	133.4
Road crossing 2 miles N. of Kingston Station	129.5

SOUTH KINGSTOWN.

Chipuxet River crossing	120.8
Road crossing (private) S. of Chipuxet River. E. rail at	119.3
Road crossing ¼ mile N. of Kingston Junction	116.2
Road crossing N. of Kingston Station	114.6
Kingston Station. Opposite centre of	113.8
Kingston Junction. Top of frog at	112.9
Road crossing ¼ mile S. of Kingston Station	110.7
Usquepaug River. Top of last bolt at N. E. corner of fender on bridge over branch of	101.0

SOUTH KINGSTOWN AND RICHMOND.

Usquepaug River. Top of bolt at N. end of bridge over	97.2

RICHMOND.

Kenyon's crossing. 1½ miles N. E. of Shannock	96.9
Kenyon's Mills. Floor of bridge at road crossing at	116.0

RICHMOND AND CHARLESTOWN.

Pawcatuck River at Kenyon's Mills. Top of last bolt on fender at S. W. end of bridge	99.9

CHARLESTOWN.

Church ½ mile E. of Shannock. Overhead bridge at	110.4

CHARLESTOWN AND RICHMOND.

Pawcatuck River at Shannock Station	90.9

RICHMOND.

Shannock Station. Opposite centre of	88.8

Road crossing 1000 feet S. W. of Shannock Station	87.2
Shannock and Carolina Road. Top of last bolt on fender of bridge over	85.2

RICHMOND AND CHARLESTOWN.

Pawcatuck River. Top of bolt at N. E. end of fender on bridge over	87.3

CHARLESTOWN.

Carolina Station. Opposite centre of	91.2
Road crossing at Carolina Station	91.7
Road crossing 1200 feet S. W. of Carolina Station. Under bridge at	95.5
Floor of same bridge	115.2
Stream crossing 1 mile S. W. of Carolina Station	85.8

CHARLESTOWN AND RICHMOND.

Pawcatuck River. S. E. corner of bridge over	64.3

RICHMOND.

Meadow Brook crossing	57.2
Wood River Junction Station. Opposite centre of	56.7
Road crossing at Wood River Junction Station	56.7

RICHMOND AND CHARLESTOWN.

Pawcatuck River ¾ mile S. W. of Wood River Junction. S. W. end of bridge over	58.6

CHARLESTOWN.

Stream crossing 1½ miles S. W. of Wood River Junction	61.1
Road crossing 1¾ miles S. W. of Wood River Junction. Under bridge at	62.7
Floor of same bridge	79.5

CHARLESTOWN AND HOPKINTON.

Pawcatuck River 1¼ miles N. E. of Niantic. S. end of bridge over	56.0

HOPKINTON AND WESTERLY.

Pawcatuck River 1000 feet N. E. of Niantic. N. E. end of bridge over.	54.9

WESTERLY.

Road crossing at Niantic	55.9
Niantic Station. Opposite centre of	55.5
Road crossing ½ mile W. of Niantic. Under bridge at	54.6
Floor of same bridge	71.2

Stream crossing 2 miles W. of Niantic. N. E. end of bridge over	38.1
Stream crossing 2 miles N. E. of Westerly	38.6
Road crossing 2 miles N. E. of Westerly	40.3
Road crossing 1½ miles N. E. of Westerly	50.2
Road crossing 1¼ miles N. E. of Westerly	56.2
Road crossing 1 mile N. E. of Westerly. Under bridge No. 104 at	62.8
Floor of same bridge	82.4
High Street crossing. Under bridge No. 103 at	42.2
Floor of same bridge	58.0
2d bridge E. of Westerly Station. No. 102A. Floor of (West Street)	59.8
1st bridge E. of Westerly Station. No. 102. Floor of (Canal Street)	54.6
Westerly Station. 2d rail opposite centre of	34.1
1st street crossing S. W. of Westerly Station	33.1

RHODE ISLAND AND CONNECTICUT.

Pawcatuck River at Westerly. N. E. of bridge over	32.5

STONINGTON, CONN.

Pawcatuck. N. end of bridge over Main Street	32.5
Street crossing ⅔ mile S. W. of Westerly	30.5
Pawcatuck River. High tide in (data not very reliable)	3 35
Road crossing 1 mile S. of Westerly Station	30.9
Road crossing 2½ miles N. E. of Stonington. Under bridge at	20.4
Road crossing 1½ miles N. E. of Stonington. Under bridge at	8.8
Floor of same bridge	25.1
Wicketequock River. S. W. end of bridge over	11.2
Wicketequock River. High tide in (taken from marks on the rocks)	2.6
Road crossing 1 mile N. E. of Stonington	8.0
Stonington Junction. Opposite centre of signal tower at	7.3
Street crossing 1000 feet E. of Stonington Station. S. rail at	11.1
Stonington Station. Opposite centre of	7.1

From Apponaug via highway to River Point; thence via the N. Y. & N. E. R. R. to Plainfield Junction, Conn.; thence via the N. Y. & N. E. R. R. to Douglas, Mass.; thence via highway to Pascoag, R. I.; thence via the P. & S R. R. to Olneyville. Benches are top of rail unless otherwise stated.

WARWICK.

Apponaug. Top of hill on Main Street	48.6
Apponaug Hotel. Ground on street at S. E. corner of	21.9
Centreville and River Point Road. Ground at intersection of	27.4

Stream crossing ½ mile N. W. of Apponaug. Floor of bridge over	27.3
Stream crossing 1¼ miles from Apponaug. Top of culvert under road at	92.7
Whipple's Store. Road crossing at	105.2
Stream crossing ¼ mile S. of Westcott. Top of culvert under road at	72.9
Westcott Station. Opposite centre of	85.0
New London and Providence Pike at Westcott. N. Y. & N. E. R. R. crossing of	83.3
Pawtuxet Valley R. R. Top of rail on bridge over	87.8
Flat River. Top of rail at N. E. end of bridge over	91.6
River Point Station. Opposite centre of	94.5
Road crossing at River Point	94.7
Street crossing at River Point. N. W. end of bridge at	104.6
Road crossing E. of Arctic Station	129.8
Arctic Station. Opposite centre of	131.6
Road crossing 500 feet E. of Centreville. Under bridge at	156 0
Floor of same bridge	175.9
Road crossing just E. of Centreville Station	161.3
Centreville Station. Opposite centre of	161.8
Road crossing ⅛ mile W. of Centreville Station. Under bridge at	193.8
Floor of same bridge	213.4

COVENTRY.

Road crossing 500 feet E. of Quidnick Station	211.0
Road crossing at Quidnick Station	213.4
Quidnick Station. Opposite centre of	213 7
Flat River just W. of Quidnick Station. Top of spike at W. end of bridge over	216.9
Road crossing at Anthony Station	222.7
Anthony Station. Opposite centre of	223.1
Flat River just W. of Anthony. W. end of bridge over	227.7
Anthony and Washington road. N. W. end of bridge at crossing of	243.3
Road crossing just E. of Washington Station	245.0
Washington Station. Opposite centre of	244.9
Road crossing ⅛ mile W. of Washington Station	248.4
Post ⅛ mile W. of Washington Station. Top of S. rail opposite	249.7
Stream crossing 1 mile E. of Coventry Station	264.9
Road crossing ½ mile E. of Coventry Station	274.1
Flat River ⅓ mile E. of Coventry Station. On bridge over	283.1

Road crossing ¼ mile E. of Coventry Station	292.5
Coventry Station. Opposite centre of	304.5
Road Crossing at Coventry Station	305.4
Flat River 400 feet W. of Coventry Station. W. end of bridge over	309.9
Flat River 2 miles W. of Coventry Station. W. end of bridge over	380.6
Road crossing 1½ miles E. of Summit Station	403.8
Flat River 1¼ miles E. of Summit Station. W. end of bridge over	416.1
Road crossing 1 mile E. of Summit Station. Under bridge at	441.0
Floor of same bridge	459.1
Road crossing at Summit Station	463.5
Summit Station. Opposite centre of	463.3
Buckshorn Brook 1000 feet E. of Greene Station. W. end of bridge over	431.6
Greene Station. Opposite centre of	427.1
Road crossing at Greene Station	429.1
Road crossing 1 mile W. of Greene Station	391.4
Moosup River 1 mile W. of Greene Station. E. end of bridge over	385.4

Rhode Island and Connecticut.

Stone Boundary Post between Rhode Island and Connecticut. Top of	374.1

Sterling, Conn.

Road crossing 1500 feet E. of Oneco Station	367.4
Road crossing 1000 feet E. of Oneco Station	365.3
Oneco Station. Opposite centre of	361.3
Road crossing just W. of Oneco Station	360.5
Road crossing ¼ mile W. of Oneco Station	353.6
Road crossing ¼ mile E. of Sterling Station	323.3
Sterling Station. Opposite centre of	303.9
Road crossing at Sterling Station	303.2
Moosup River ¼ mile W. of Sterling Station. W. end of bridge over	301.0
Moosup River ½ mile W. of Sterling Station. W. end of bridge over branch of	300.4
Bridge over R. R. 1½ miles W. of Sterling Station. Floor of	307.3

Plainfield, Conn.

Road crossing 1 mile E. of Moosup Station	278.1
Road crossing ½ mile E. of Moosup Station	260.5
Road crossing	236.3

Moosup River at Moosup. W. end of bridge over	236.6
Road crossing 250 feet E. of Moosup Station	235.5
Moosup Station. Opposite centre of	233.2
Moosup River 1000 feet W. of Moosup Station. W. end of bridge over	227.9
Road crossing 1200 feet W. of Moosup Station	226.9
Road crossing 1 mile W. of Moosup Station	212.7
Road crossing 1¼ miles W. of Moosup Station	199.2
Road crossing 1½ miles W. of Moosup Station	188.3
Road crossing 1000 feet E. of Plainfield Station	163.2
Stream crossing 200 feet E. of Plainfield Station. W. end of bridge over	161.3

PLAINFIELD JUNCTION, CONN.

Crossing of the Providence and Norwich Divisions of the N. Y. & N.E. R. R.	162.2
Road crossing ¼ mile N. of Plainfield	163.7
Road crossing 2 miles N. of Plainfield	185.9
Road crossing 1000 feet S. of Central Village	185.7
Moosup River 500 feet S. of Central Village. N. end of bridge over	185.0
Road crossing 200 feet S. of Central Village	184.8
Road crossing 100 feet S. of Central Village	184.9
Central Village Station. Opposite centre of	185.4
Road crossing at Wauregan Station	213.0
Wauregan Station. Opposite centre of	213.2
Road crossing ½ mile N. of Wauregan Station	220.1

KILLINGLY, CONN.

Road crossing 3 miles S. of Danielsonville	213.9
Road crossing 1½ miles S. of Danielsonville. Under bridge at	219.8
Floor of same bridge	239.2
Creek crossing 1 mile S. of Danielsonville	217.1
Road crossing 1500 feet S. of Danielsonville	218.1
Street crossing 800 feet S. of Danielsonville Station	222.4
Street crossing at Danielsonville Station	226.0
Danielsonville Station. Opposite centre of	226.4
Road crossing ½ mile N. of Danielsonville Station	233.1
Road crossing 1 mile N. of Danielsonville Station	239.9
Five Mile River 1½ miles N. of Danielsonville Station	236.9

Road crossing 1¾ miles N. of Danielsonville Station	239.3
Five Mile River ½ mile S. of Dayville Station. S. end of bridge over	244 6
Dayville Station. Opposite centre of	243.3
Road crossing at Dayville Station	243.5
Road crossing 200 feet N. of Dayville Station	243.3
Five Mile River 600 feet N. of Dayville Station. On bridge over	243.4
Road crossing 1½ miles N. of Dayville Station	274.3
Road crossing 500 feet N. of above road	277.6

PUTNAM, CONN.

Road crossing 2 miles S. of Putnam	272.4
Road crossing 1⅞ miles S. of Putnam Station	267.3
Stream crossing 1 mile S. of Putnam Station	267.3
Road crossing 2000 feet S. of Putnam Station. Bridge over	278.5
Road crossing at Putnam	286.4
Putnam Station. Opposite sign "Restaurant" on Norwich Division track	287.3
Putnam Station. 2nd rail on Main Line opposite centre of	287.1
Putnam Station. Intersection of Main Line and Norwich Division of the N. Y. & N. E. R. R. at	287.7
May Street crossing. Putnam	290.4
Street crossing 2000 feet N. E. of Putnam. Under bridge at	294.2
Floor of same bridge	313.6

THOMPSON, CONN.

Road crossing at Mechanicsville. Under bridge at	315.2
Floor of same bridge	333.0
Quinnutisset Brook ¼ mile N. E. of Mechanicsville	333.2
Road crossing ¾ mile N. E. of Mechanicsville. N. E. end of bridge at	351.4
Road and stream crossing ⅛ mile N. E. of Mechanicsville. S.W. end of bridge at	388.1
Road crossing 1000 feet S. W. of Thompson Station	419 4
Road crossing at Thompson Station	428.3
Thompson Station. Opposite centre of	429.2
Road crossing ½ mile N. E. of Thompson Station	473.3
Road crossing 1½ miles N. E. of Thompson Station	512.0
Summit Cut 1¾ miles N. E. of Thompson Station	525.0
Road crossing 2¼ miles N. E. of Thompson Station. Under bridge at	510.4
Road crossing ½ mile W. of E. Thompson Station	516.2

Road crossing 700 feet E. of above road	509.5
Five Mile River, 1500 feet W. of E. Thompson Station. Over culvert at W. branch of	498.5
E. Thompson Station. Opposite centre of	487.2
Southbridge and N. Y. & N. E. Railroads. Top of frog at intersection of	484.5
Road crossing 1000 feet E. of E. Thompson Station. On bridge at	484 2
Road crossing ½ mile E. of E. Thompson Station. Under bridge at	493.8
Floor of same bridge	508.6
Five Mile River ½ mile E. of E. Thompson Station. Over culvert at E. branch of	499.4

Douglas, Mass.

Road crossing 1½ miles E. of E. Thompson	546.0
Stream crossing 1½ miles E. of E. Thompson	547.0
Stream crossing 2¼ miles E. of E. Thompson	575.1
Douglas Summit, 1¾ miles W. of Douglas. Under stone arch at	629.5
Stream crossing ¼ mile W. of Douglas Station	598.8
Stream crossing 700 feet W. of Douglas Station. Over culvert at	589.9
Douglas Station. Opposite centre of	581.6
Douglas Station. Culvert at	581.2
Intersection of roads 1½ miles S. of Douglas	519.5
School House, 2 miles S. of Douglas. Top of stone in front of	466.9
Intersection of roads 2¼ miles S of Douglas	460.7
Grave Yard. Top of stone post at S. W. corner of	464 3
Stream 1¼ miles N. of Round Top. Floor of bridge over	428.5

Rhode Island and Massachusetts.

Stone Boundary Post between Rhode Island and Massachusetts. Top of	442.6

Burrillville.

Round Top. Top of curb at corner of hotel at	407.8
Stream ¼ mile S. of Round Top. Floor of bridge over	381.2
Stream 1 mile S. of Round Top. Floor of bridge over	374.2
Cemetery 1 mile S. of Round Top. Top of stone gate post at	382.5
Intersection of road 1½ miles N. of Harrisville	394.1
Intersection of road N. end of Graniteville	353.0
Clear River at Graniteville. "On highest point centre tender on bridge."	345.5
Harrisville. Intersection of roads at School House	355.0

Harrisville Station. Opposite centre of	338.6
Road crossing at Harrisville Station	338.4
Road crossing 100 feet E. of Harrisville Station	338.2
Stream crossing 500 feet W. of Oakland. W. end of bridge at	315.2
Road crossing at Oakland	314.5
Oakland Station. Opposite centre of	314.2
Road crossing 1000 feet W. of Harrisville	341.8
Pascoag Station. S. rail N. W. end of platform at	391.1
Chepachet River 1000 feet E. of Oakland. W. end of bridge over	313.1
Stream crossing ¾ mile E. of Oakland Station	341.0
Stream crossing 1 mile E. of Oakland Station	350.4
Road crossing 1½ miles E. of Oakland Station	366.7
Road crossing 2¼ miles E. of Oakland Station	367.3
Road crossing ¼ mile W. of Tar Kiln Station	370.3
Road crossing at Tar Kiln Station	357.9
Tar Kiln Station. Opposite centre of	357.5
Bridge 500 feet E. of Tar Kiln Station	353.9

NORTH SMITHFIELD.

Road crossing at Field Station	313.5
Road crossing ¼ mile E. of Field Station	318.6
Road crossing ¼ mile W. of Primrose Station	296.9
Primrose Station. Opposite centre of	289.0
Road crossing at Primrose Station	288.3
Providence and Douglas Turnpike 1 mile S. E. of Primrose Station	262.0

SMITHFIELD.

Stream crossing ¼ mile N. of Smithfield Station	260.2
Smithfield Station. Opposite centre of	262.7
Road crossing at Smithfield Station	262.5
Road crossing ½ mile S. E. of Smithfield Station	243.2
Road crossing 1¼ miles N. W. of Stillwater Station	212.2
Woonasquatucket River 600 feet S. of last road. S. end of bridge over.	206.5
Road crossing at Stillwater Station	186.8
Stillwater Station. Opposite centre of	185.8
Road crossing at Georgiaville Station	165.5
Georgiaville Station. Opposite centre of	164.5
Road crossing 100 feet S. of Georgiaville Station	162.0
Road crossing 200 feet S. of Georgiaville Station	159.6

Road crossing 400 feet S. of Georgiaville Station	155.5
Road crossing ½ mile S. of Georgiaville Station	140.4
Road crossing at Allenville Station	134.3
Allenville or Enfield Station. Opposite centre of	133.6
Stream crossing ¼ mile S. of Allenville Station	129.6

JOHNSTON.

Graystone Station. Opposite centre of	115.0
Road crossing at Graystone Station	114.5
Centredale Station. Opposite centre of	107.9
Road crossing at Centredal Station	107.7
Road crossing at Allendale Station	109.5
Allendale Station. Opposite centre of	108.9
Stream crossing ½ mile S. of Allendale Station	88.3
Lymansville Station. Opposite centre of	87.0
Manton Station. Opposite centre of	68.4
Road crossing at Manton Station	67.7
Dyerville Station. Opposite centre of	65.7
Woonasquatucket River 800 feet S. of Dyerville. S. end of bridge over.	58.6
Mill Race 1000 feet S. of Dyerville Station. S. end of bridge over	55.8
Hartford Road crossing. Olneyville	39.1

From Summit Station on the N. Y. & N. E. R. R. to Hope Valley.

COVENTRY.

First hill S. of Summit Station opposite large frame house. Top of	587.7
Road crossing ¾ mile S. of Summit Station	581.6
School House ¾ mile S. of Summit Station. S. W. corner of stone step, S. W. end of	591.1
Intersection of roads 200 feet S. of School House	585.3
Stream crossing 1¼ miles S. of Summit Station. Floor of bridge over	481.8

WEST GREENWICH.

Intersection of roads 3 miles S. of Summit Station. On S. W. corner of stone step in front of deserted house at	520.8
Stream crossing ⅛ mile W. of last road. Floor of bridge over	488.0
School House 3½ miles S. of Summit Station. On S. E. corner of stone step at	534.1
Intersection of roads at above School House	537.3
Forks of road 4 miles S. of Summit Station	526.8

Stream crossing 4¾ miles S. of Summit Station. Floor of bridge over	475.6
Forks of road 5¼ miles S. of Summit	509.3
Forks of road 5¾ miles S. of Summit	463.3
Forks of road 6 miles S. of Summit	468.0
Forks of road 6¾ miles S. of Summit	432.7
Forks of road 3¾ miles N. of Arcadia	323.6
Forks of road 3½ miles N. of Arcadia	305.4

Exeter.

Road crossing 3 miles N. of Arcadia. Wyoming 7 miles. W. Greenwich 7 miles	255.7
Flat River. Floor of bridge over E. branch of	161.9
Stream 200 feet N. of church. Floor of bridge over	198.8
Church at road crossing 2 miles N. of Arcadia. On S. E. corner of stone step at S. E. corner of	205.1
Stream at N. end of Arcadia. Floor of bridge over	172.7

Richmond.

Arcadia. On corner of step N. W. corner of store at	198.0
Arcadia. On large stone 10 feet N. W. of store at	197.9
Intersection of roads ¼ mile N. of Barberville	130.4
Stream ¼ mile N. of Barberville. Floor of bridge over	127.9

Richmond and Hopkinton.

Flat River at Barberville. Floor of bridge over	113.6

Hopkinton.

Forks of road 1 mile N. of Wyoming	123.2
Forks of road 200 feet S. E. of last fork	123.9
Intersection of road at Wyoming	105.3
Stream at Wyoming. Floor of bridge over	85.3
Wyoming. On culvert at S. end of Park near Bank at	93.5
Hope Valley Station. Top of rail opposite ticket office door at	81.6

From 1 mile E. of Summit Station N. over Chopmist Hill to Pascoag.

Coventry.

Intersection of roads 100 feet N. of railroad	448.6
Stream ¼ mile N. of railroad. Floor of bridge over	416.9
Intersection of roads ¾ mile N. of railroad	412.7
House about 40 feet W. of above intersection. Top of lower stone step of	420.8
Stream ⅘ mile N. of railroad. Floor of bridge over	379.2

Forks of road 1 mile N. of railroad	389.7
Stream ¼ mile S. of Potterville. Floor of bridge over	302.2
Potterville. Forks of road at	304.9
Cemetery at Potterville. First step at entrance to	305.4
Intersection of roads ½ mile N. W. of Potterville	342.3

FOSTER.

Forks of road 1¼ miles S. of Providence and Plainfield Pike	517.4

FOSTER AND SCITUATE.

Providence and Plainfield Pike. W. end of culvert under N. & S. road at crossing of. S. side of Pike	506.0
Providence and Plainfield Pike. Crossing of N. & S. road with ; about ½ mile E. of S. end of Westconnaug Reservoir	505.1
Stream ¼ mile N. of Providence and Plainfield Pike. Culvert over.	455.4

SCITUATE.

Cemetery 1¾ miles N. of Providence and Plainfield Pike. On ground step of	568.4
Road intersection ½ mile E. of Clayville	503.7
Intersection of roads ½ mile E. of Clayville. 1 mile S. of Rockland. On stone near centre of grass spot at	521.7
Cemetery ½ mile S. of Rockland. Top of ground stone at gate of	480.5
Intersection of roads at N. end of Rockland	403.5
Rockland. Top of stone step (N. E. corner) of store at	335.8
Mill Race on road from Rockland to Ponagansett. Floor of bridge over	326.8
Ponagansett River ¼ mile E. of Ponagansett. Centre of floor of bridge over	291.4
Intersection of roads ¼ mile E. of Ponagansett	287.2
Swamp Brook ⅓ mile E of Ponagansett. Floor of bridge over	284.6
Intersection of roads ¾ mile E. of Ponagansett	311.7
Road crossing at S. end of Chopmist Hill	626.4
Top of stone at S. W. corner of yard at corner fence post	628.9
Chopmist Hill School House. Top of stone step at S. W. corner of	643.9
Providence and Danielsonville Pike crossing	652.2
Chopmist Post Office. Top of stone step under gate at entrance to	654.2
Hartford and Providence Pike crossing	707.8
Church and School House near crossing of Hartford and Providence Pike. On centre of stone step (close to house) at	701.6

Cemetery 1 mile N. of last crossing. On S. W. corner of stone step at entrance to	635.8
Stream 1½ miles N. of Hartford and Providence Pike. Floor of bridge over	607.1

GLOCESTER.

Intersection of roads 3¼ miles S. of Chepachet	613.2
On large rock 100 feet N. of road intersection. Date 1885 on rock	611.1
Cherry Valley or Trap School House. On S. E. corner of stone step of	534.7
Road crossing 3 miles S. of Chepachet	527.3
Stream 3 miles S. of Chepachet. Top of culvert over	502.1
Stream 1¾ miles S. of Chepachet. Top of culvert over	531.0
Intersection of roads 1½ miles S. of Chepachet	524.1
Intersection of roads 1 mile S. of Chepachet	502.2
Stream ¾ mile S. of Chepachet. Top of culvert over	460.2
Intersection of roads ½ mile S. of Chepachet	465.2
Intersection of road with Providence and Thompson Pike at S. end of Chepachet	450.2
Chepachet Hotel. On N. W. corner of stone step opposite ladies' entrance to	427.4
Chepachet River at Chepachet. Floor of bridge over	418.3
Intersection of road to Pascoag with Providence and Thompson Pike	427.5
Chepachet. Top of stone post at S. W. corner of Dr. Harris's yard, at intersection of roads to Oakland and Pascoag at	442.7
Intersection of road running W. 1 mile N. of Chepachet. Top of stone in centre of Pascoag road	429.6
Intersection of Harrisville and Pascoag road, 1 mile N. of Chepachet	417.3

BURRILLVILLE.

Intersection of Harrisville and Pascoag road, 1 mile S. of Pascoag. Top of stone at	541.3
Pascoag. On S. W. end of stone step at S. end of porch in front of Manufacturers' Hotel at	438.1
Pascoag. On street at corner of Post Office in	419.0

Washington, D. C., November 10, 1888.

APPENDIX C.

EXPENDITURES.

Appropriation of $5000, March, 1888, for Survey and Map, to be Executed by U. S. Geological Survey.

Traveling, Subsistence, and Field Expenses, May 16 to Nov. 10, 1888.

Triangulation party	$646 83
Leveling party	239 61
Topography parties	2,199 23
	$3,085 67

Salaries, December, 1888, to March, 1889.

Office work on map in Washington	$1,780 60
Total amount expended	$4,866 27

Vouchers Nos. 1 to 63 for that amount, approved by the U. S. Geological Survey and by this Commission, are on file in the office of the State Auditor.

Balance of appropriation unexpended, $133.73.

Expenses of Commission on Survey and Map, Original Resolution, July, 1888, to January, 1891.

Office furniture	$78 31
Printing 875 proofs of original copper plates	61 97
Traveling	24 69
Stationery, printing, and copying	26 65
Maps and mounting	15 25
Postage and express	8 90
Total	$215 77

Appropriation of $3,500, April, 1889, and $1,000, April, 1891, Total $4500, for Wall Map and Atlas.

Plate Corrections, June, 1891, to May, 1892.

Correcting electro-copper plates	$219 25
Proving the same	140 25
	$359 50

Wall Map, August, 1890, to November, 1891.

Transferring to stone, as per contract	$300 00
Corrections on stones	72 50
Paper and printing, 1,450 copies	507 50
Design and engraving title	52 50
Mounting 1,004 maps	602 40
Wrapping 699 maps	13 98
Insurance	13 50
Freight, postage, and express	42 33
Stationery and printing	5 58
Traveling	14 08
Maps and mounting	12 75
Preparing copy, proof reading, etc	300 00
	$1,937 12

Atlas, January to May, 1892.

Three electro-copper plates and corrections, 1: 250,000 map	$165 00
Transferring 10 sheets to stone, as per contract	535 00
Transferring 3 extra sheets to stone	195 00
Corrections on stones	256 75
Insurance	19 92
Postage, express, traveling, etc	23 40
Preparing copy and index, proof reading, etc	350 00
	$1,545 07

Summary.

Plate Corrections	$359 50
Wall Map	1,937 12
Atlas	1,545 07
Compensation of Commission	600 00
	$4,441 69
Balance of appropriation unexpended	$58 31

Appropriation of $1,000, March, 1892, for Printing, Binding and Distributing Atlas, May to December, 1892.

Paper and printing 500 copies 13 atlas sheets....	$300 00
Paper and printing 500 copies index and three introductory pages.	96 67
Binding 400 atlases..............	480 00
Wrapping and lettering atlases................................	23 70
Insurance.............	1 80
Circulars and postage.......................................	7 95
	$910 12
Balance of appropriation unexpended.........................	$89 88

APPENDIX D.

CHANGES IN PLATES.

The following is a list of the corrections and additions made on the electrotype copper plates, showing wherein they differ from the originals of the United States Geological Survey:

FRANKLIN SHEET.

Public Culture Plate—(Black).

Add names "**Diamond Hill,**" "**Beacon Pole Hill,**" and "**Iron Mine Hill,**" to hills in Cumberland.

Add road beside boundary of Cumberland and Woonsocket.

Hydrography Plate—(Blue).

Change *Blackstone River*, in southwest corner of sheet, to correspond with Blackstone and Providence sheets.

BLACKSTONE SHEET.

Public Culture Plate—(Black).

Add name "Hamlet," in southwest corner of sheet.

WEBSTER SHEET.

Public Culture Plate—(Black).

Add name "**Benson Mountain,**" in northwest corner of Burrillville.

PROVIDENCE SHEET.

Public Culture Plate—(Black).

Add "s" to name "Arnolds Mill," in Cumberland.

After "N.Y. & N. E. R. R.," omit "PROVIDENCE BRANCH," and add "(RHODE ISLAND AND MASSACHUSETTS R. R.)."

Add name "Abbotts Run," post office and railroad station.

Change "*Abbots Run*" to "*Abbotts Run,*" name of stream in North Attleborough.

Add road, on northern part of sheet, in northeastern portion of Cumberland, to connect with road on Franklin sheet.

Add name "*Crookfall Brook,*" boundary between North Smithfield and Lincoln.

Add road near *Moshassuck River*, south of Lime Rock.

Add name "Dexter Quarry," southeast of Lime Rock.

Inclose "PROVIDENCE AND WORCESTER R. R." in parentheses, and prefix "N. Y. P. & B. R. R.," in Cumberland.

Prolong road near northwest corner of sheet to northern border, to meet road on Franklin sheet.

Add new piece of road southwest of Manville, in eastern part of North Smithfield.

Add names, "*Abbotts Run,*" stream at Valley Falls; "*Cranberry Pond,*" southwestern portion of Attleborough; "Pleasant View," in Pawtucket.

Inclose "BOSTON AND PROVIDENCE R. R." in parentheses, in two cases, and add "O. C. R. R.," in Attleborough.

Change "BOSTON AND PROVIDENCE R. R." to "EAST PROVIDENCE BRANCH," in Seekonk.

Omit one bridge over the *Blackstone River*, in Pawtucket.

Add road running north and south, at Lorraine Mills.

Change "PROVIDENCE AND WORCESTER R. R." to "EAST PROVIDENCE BRANCH," in East Providence, and add "N. Y. P. & B. R. R."

Add name "Swan Point," in Providence; and correct angle of road south of that name.

Change fork of roads north of Rumford, in East Providence.

Add road parallel to railroad, south of Dunnell Print Works; also add piece of road to the west, in Pawtucket.

Add piece of road east of railroad and crossing it, near northern boundary of Providence; add another angular piece of road, east of the one last named; add name "*Hope Reservoir,*" in Providence.

Connect roads, just east of railroad, north of *Hammond's Pond*, in Pawtucket.

Add dotted harbor line near Pawtucket, west shore; and opposite Swan Point, east shore.

Continue North Main street and Charles street; also cut off Olney street and Halsey street, west and southwest of *Hope Reservoir*, Providence.

Add outlet of *Leonard's Pond* to *Moshassuck River*, in place of road.

Add names "PAWTUCKET," post office and railroad station; "Butterfly Factory," near Lonsdale; "Mount Pleasant," in Providence.

Make street double line, north of words "Mount Pleasant."

Add four roads near Mount Pleasant and **Bradley Hill**, and continue one of these roads south beyond parallel of latitude. Continue Douglas avenue and a cross street, in Providence.

Add names "Louisquisset Pike," in Lincoln; "Douglas Pike," in Smithfield; "Mineral Spring Pike," in North Providence.

Erase boundary line drawn into Smithfield, on river, western border of sheet.

Inclose "PROVIDENCE AND SPRINGFIELD R. R." in parentheses.

Add name "Luthers Corner," change name "*Clear Run Brook*" to "*Clay Run Brook*," in Seekonk.

Change State boundary west of South Seekonk; also near Barrington, at *Runnins River*.

Re-engrave the name "BARRINGTON," to bring it wholly within the boundaries of the town.

Insert curve in street south of name "Friends School;" insert name "Brown Univ.;" add two pieces of street west of that name, one curved.

Change name "*Burges Cove*" to "*Burgess Cove*," in Providence.

Add name "Fort Independence," in Providence.

Continue boundary of Providence south of **Starve Goat Island.**

Add name "Hunts Mills," in East Providence; and change dotted road leading thereto.

Change location of name "East Providence," post office.

Change full road to dotted road northeast of Riverside.

Erase "Sta." after "Silver Spring."

Change roads at Armingtons Corner, in East Providence; make main road full, not dotted, on the east.

Add name "*Posnegansett Pond*," in Warwick.

Add name "Taunton Pike," in East Providence.

Add harbor line, east shore, north of railroad bridge; also from **Fullers Rock** south to margin of sheet.

Change harbor line at R. I. Hospital; and make an angle in it at **Fields Point.**

Add name "Elmwood," in Providence.

Put marks of parenthesis around all old names of railroads.

Add road from **Neutaconkanut Hill** to Thornton.

Add name "Hartford Road," in Johnston.

Erase name "Wayland Sta.;" add names "Arlington" and "*Dyers Pond*," in Cranston.

Continue Atwells avenue over the railroad, in Providence.

Hydrography Plate—(Blue).

Add brooks in northeastern portion of Cumberland, continuations of one east of State boundary, and one on Franklin sheet.

Add brook, Dexter Quarry, Lincoln, and correct brook west of Lime Rock.

Change *Sneech Pond* outlets, in Cumberland, erasing one and dividing the other.

Carry brook southwest to border of sheet, in southeastern portion of North Smithfield.

Erase connection between *Abbotts Run* and *Cranberry Pond.*

Add brook, east side of *Cranberry Pond.*

Make outlet of *Abbotts Run* into *Blackstone River* more distinct.

Add brook, Swan Point and Butler Hospital region, in Providence.

Add outlet of *Leonards Pond* to *Moshassuck River*, in place of road.

Connect two portions of *Scotts Pond,* near Lonsdale.

Connect stream at Dunnell Print Works, in Pawtucket.

Connect brook with one on Taunton sheet, northeast of Orleans Mills.

Continue brook running northwest, south of word "Rehoboth."

Add swamp east of Riverside.

Connect portions of *Cunliffs Pond,* in two places.

Hypsography Plate— (Brown).

Change position of "289," hill southwest of Arnolds Mills.

Add "274," elevation of *Sneech Pond,* in Cumberland.

Add "200" to contour line, **Great Rock**, Seekonk; also "200" to contour line northwest of that; make these two contours heavier.

Add "74," elevation of *Scotts Pond*," in Lincoln; "51," elevation of pond east of *Scotts Pond;* and "165," elevation of *Hope Reservoir*, in Providence.

Add "204," elevation of hill north of *Hope Reservoir.*

Change "43" to "48," elevation of pond in Wanskuck.

Change position of "304," elevation of *Pawtucket Reservoir.*

Change "56" to "55," elevation of *Randalls Pond,* in North Providence.

Add "190," elevation of **Wind Mill Hill**, North Providence; and "277," elevation of *Providence Reservoir*, at **Fruit Hill**.

Change "300" to "200," on contour line between **Jenks Hill** and *Moshassuck River.*

Erase "27," northern part of *Cunliffs Pond,* in Cranston.

Change position of "40," elevation of *Posneganset Pond.*

Add "66," elevation of *Print Works Pond;* "40," *Spectacle Pond;* "30," *Blackmore Pond;* all in Cranston.

Change position of "183," elevation of *Sockanosset Reservoir*, and of "183," elevation of **Rocky Hill,** in Cranston.

BURRILLVILLE SHEET.

Public Culture Plate—(Black).

Add new railroad, in northern part of the sheet, with words "N. Y. AND N. E. R. R. (WOONSOCKET AND PASCOAG RAILROAD)."

Change name "Bank Village" to "Union Village," in North Smithfield.

Erase "Station," after "Primrose," in North Smithfield.

Add name "Fields Station," in North Smithfield.

Substitute name "Tarkiln" for "Tarkiln Station," in Burrillville.

Erase name "Harrisville," and change "Burrillville P. O." to "Harrisville."

Change name "Allenville" to "Enfield," eastern margin of sheet.

Add dotted road south of **Applehouse Hill,** in Cranston, and change part on margin to match one on Providence sheet.

Hydrography Plate—(Blue).

Add brook on eastern margin, near *Georgiaville Pond,* to connect with one on Providence sheet.

Connect *Moswansicut River* and *Moswansicut Pond.*

Hypsography Plate—(Brown).

Insert "300," elevation of *Spragues Upper Reservoir.*

PUTNAM SHEET.

Public Culture Plate—(Black).

Change name "Gookes Store" to "Cookes Store," and erase "P. O." after "Foster," northern part of town of Foster.

Hydrography Plate—(Blue).

Adjust *Wallum Pond* to match Webster sheet.

FALL RIVER SHEET.

Public Culture Plate—(Black).

Change name "Pottersville" to "Egypt," and add short piece of road north of it, on northern border of sheet.

Add short piece of road near northwestern corner of sheet, to meet one on Narragansett Bay sheet.

Erase piece of road in Bristol, western margin of sheet.

Erase name "BRISTOL NECK."

Add name "North Tiverton," post office.

Add short piece of road on western margin of sheet, at *Kickamuit River*, to meet one on Narragansett Bay sheet.

Inclose "FALL RIVER, WARREN AND PROVIDENCE RAILROAD" in parentheses, and prefix "O. C. R. R."

Change "Sandfords Bound" to "Sanfords Bound," and erase road near it, east of Tiverton.

Add road across railroad at *Long Neck Cove*, northern part of Portsmouth, and erase railroad turnouts.

Erase most of the roads running east and west in Portsmouth and Middletown, western margin of sheet, and add others.

Add road on southern border of sheet, to connect with one on Sakonnet sheet, north of *Tunipus Pond.*

Hypsography Plate—(Brown).

Add "200," elevation of **Mount Hope**; and "340," **Pocasset Hill.**

NARRAGANSETT BAY SHEET.

Public Culture Plate—(Black).

Add names "Barrington Centre," post office, and "Nayatt," railroad station, in Barrington.

Add road from **Nayatt Point** to Nayatt Station.

Add name "**Rumstick Pt.,**" in Barrington.

Inclose "PROVIDENCE, WARREN AND BRISTOL R. R." and "WARREN AND FALL RIVER R. R." in parentheses.

Add road below "N" of word "WARREN," to connect with one on Fall River sheet.

Add road above "S" of word "BRISTOL," running east to margin of sheet, to connect with one on Fall River sheet.

Add two dotted roads in Bristol, to connect with roads on Fall River sheet, one at *The Narrows*, and the other north of **Mt. Hope.**

Change name "Spring Grove" to "Spring Green," railroad station in Warwick.

Change name "*Passeonkquis Pond*" to "*Passeonkquis Cove,*" in Warwick.

Change name "*Occupasspatuxet Cove*" to "*Occupessatuxet Cove,*" in Warwick.

Change name "Buttonwood" to "Buttonwoods," also "Hoxie" to "Hoxsie," in Warwick.

Add harbor line, east side, from northern margin of sheet to **Nayatt Point.**

Add names "Oak Lawn" and "Howard," in Cranston.

Add name "Westcott," in Warwick.

Change names "Coweset" to "Cowesett," and "**Chippanogsett Id.**" to "**Chepiwanoxet Id.,**" in Warwick.

Add names "*Walkers Cove*" and "**Walkers Id.,**" in Bristol.

Add "LIGHT VESSEL," south of "**Hog Island.**"

Erase road between railroad and highway, northern part of Portsmouth.

Add name "Bristol Ferry," post office and railroad station, northern part of Portsmouth; and erase "BRISTOL FERRY," south of Bristol.

Add name "Coal Mines," in Portsmouth; and erase roads south of it.

Straighten road at Portsmouth Grove.

Add names "**Despair Id.**" and "**Gooseberry Id.,**" near **Hope Island.**

Add name "Potowomut," post office in Warwick.

Add name "*Hunts River*," between East Greenwich and North Kingstown.

Erase road southwest of **Lawtons Valley**, in Portsmouth.

Add name "South Portsmouth," post office.

Erase piece of road south of **Slate Hill**, in Middletown.

Erase portion of road north of "M," and roads south of "ET," in word "MIDDLETOWN."

Add "Spindle" and "**Half Way Rock,**" south of **Prudence Island.**

Add piece of road running east and west, southeastern part of sheet, to connect with road on Fall River sheet.

Add names "**Rhode Island or Aquidneck Island,**" in Portsmouth and Middletown.

Add road connecting other roads, at **Beacon Hill.**

Correct various roads at **Coasters Harbor Island**, and northeast and southeast of that.

Erase two pieces of road southeast of **Quaker Hill**, in Portsmouth; and one north of South Portsmouth, on eastern margin of sheet.

Add road on eastern margin, south of South Portsmouth.

Re-arrange roads south of **Miantonomy Hill.**

Erase piece of road, west of railroad, northwest of **Beacon Hill.**

Carry road to railroad and shore, west of **Slate Hill.**

Add name "**Taylors Pt.,**" east side of **Conanicut Island.**

Change name "*Nannacatucket River*" to "*Annaquatucket River*," in North Kingstown.

Change southern "LIGHT" to "OLD TOWER," at Wickford.

Add road south of **Hammond Hill**, in North Kingstown, southern border of sheet, to meet one on Newport sheet.

Hydrography Plate—(Blue).

Continue brook through swamp, eastern margin of sheet, in Bristol, to match Fall River sheet.

Continue brook into *Pawtuxet River*, north of Natick.

Connect two brooks with those on Kent sheet, northwestern part of this sheet.

Hypsography Plate—(Brown).

Add "100" in two contour lines in Bristol; "140," "160," and "160," three elevations in Bristol.

Add "140," elevation of **Warwick Neck**; and "100" in contour line.

Add "14," elevation of *Warwick Pond;* "35," *Spring Green Pond;* "44," *Duck Pond;* and "38," *Little Sand Pond.*

Add "260," elevation in three places, Portsmouth; also "220," elevation of **Hammond Hill,** North Kingstown.

KENT SHEET.

Public Culture Plate—(Black).

Add town boundary between Cranston and Scituate.

Change name "Fiskville" to "Fiskeville."

Add name "**Birch Hill,**" south of Clyde.

Change name "Riverpoint" to "River Point."

Add very short connecting railroad track, south of Lippitt.

Add name "Spring Lake," in Coventry.

Change name "Coventry Center" to "Coventry," post office.

Change name "Mount Vernon" to "Vernon," post office in Foster.

Add road on northern border of sheet, to meet one on Burrillville sheet, in Foster.

Change "Noose Neck" to "Nooseneck Hill," post office in West Greenwich.

Change "**Noose Neck Hill**" to "**Nooseneck Hill,**" name of hill in West Greenwich.

Add town boundary along road, between Coventry and West Greenwich.

Add town boundaries along roads, southeast and northeast corners of Exeter.

Change name "Exeter Hill" to "Exeter," post office.

Add name "Liberty," post office in Exeter.

Change name "**Yawker Hill**" to "**Yorker Hill,**" in Exeter.

Add two roads in southeastern part of sheet, one on southern border and one on eastern.

Add road, and change dotted road to full road, near *Barbers Pond*, southern border of sheet.

Add name "Elmhurst," post office in Richmond.

Add name "*Parris Brook,*" near **Bald Hill**; also add name "*Roaring Brook,*" near Millville; both in Exeter.

Hydrography Plate—(Blue).

Add brook on northern margin of sheet, to connect with one on Burrillville sheet.

MOOSUP SHEET.

Public Culture Plate—(Black).

Erase "P. O." after "Moosup Valley," in Foster.

Change name "*Tippecan Pond*," to "*Tippecansett Pond*."

Change name "*Yawgoag Pond*" to "*Yawgoog Pond*," in Hopkinton.

Change "Glasko" to "Glasgo."

Add town boundary between Sterling and Plainfield.

Hydrography Plate—(Blue).

Add brook, northern margin of sheet, to connect with one on Putnam sheet.

Add brook east of words "Moosup Valley," to connect with one on Kent sheet.

SAKONNET SHEET.

Public Culture Plate—(Black).

Change "F. W. ELLIS" to "J. W. ELLIS," name of commissioner.

Erase western bit of road north of letter "O" of word "LITTLE COMPTON."

Add road to connect with one on Fall River sheet, in Little Compton.

Add road in northwest corner of sheet, to match those on Newport sheet and Fall River sheet.

Arrange road running north of **Smiths Beach** to connect with one on Newport sheet.

Add "LIGHT" at **Sakonnet Point.**

Erase two cross roads between **Sachuest Beach** and **Smiths Beach**; and arrange road on **Sachuest Beach** to meet one on Newport sheet.

NEWPORT SHEET.

Public Culture Plate—(Black).

Cut off bit of road, northeast corner of sheet.

Add "s" to "**Paradise Rock**;" and erase private roads to the west.

Change name "*Gardeners Pond*" to "*Gardiners Pond*," and add roads.

Add name "**Purgatory**," in Middletown.

Add road across **Eastons Beach**; and various roads in southern part of Middletown.

Re-arrange roads in northern part of Newport; also west, northwest and southwest of *Eastons Pond.*

Add dam at *Eastons Pond.*

Change roads south and southeast of LIME ROCK LIGHT; and others northwest and west of **Ochre Point**, in Newport.

Re-arrange roads on **The Neck**, and **Castle Hill**, in Newport.

Add names "**Prices Neck**" and "**Coggeshalls Ledge**," southern part of Newport.

Add name "**Brentons Reef,**" south of **Brentons Point.**

Add "LIGHT," at **Castle Hill.**

Add roads south of FERRY, in Jamestown.

Add name "Jamestown," post office.

Add piece of railroad, on margin, northwest of Narragansett Pier.

Add words "DISTRICT OF NARRAGANSETT," in South Kingstown.

Add name "Narragansett," post office.

Change name "*Pattaquamscott River*" to "*Pettaquamscutt River;*" and add name "*Reservoir,*" in South Kingstown.

Add name "Tower Hill," village in South Kingstown.

Add town boundary along road, northwest corner of sheet.

Hydrography Plate—(Blue).

Add outlet of *Almys Pond.*

Hypsography Plate—(Brown).

Transpose "100" to contour line south of it, disconnect the two lines, and carry both to northern margin of sheet, north of Bridgetown, in South Kingstown.

CHARLESTOWN SHEET.

Public Culture Plate—(Black).

Add short piece of road and town boundary in northeastern corner of sheet, to match Kent and Newport sheets.

Add name "State Agricultural School and Experiment Station," and new roads, northeastern part of sheet.

Add name "Gould," post office in South Kingstown.

Add road running northwest from West Kingston.

Prefix "Carolina" to "Station," west of Shannock.

Add road southeast of "**Shannock Hill,**" in Richmond.

Change name "*Charles River*" to "*Pawcatuck River,*" near Carolina.

Change name "Plainville" to "Wood River Mills," south of Woodville.

Add name "Canonchet," post office, northwestern part of sheet.

Add roads west of "*Point Judith Pond.*"

Change "Matoonoc" to "Matunuc;" and add name "**Rocky Point,**" south of Matunuc.

Add name "**The Hills,**" south of **Broad Hill,** in South Kingstown.

Add "Green Hill," post office, in South Kingstown.

Change name "**Rock Point**" to "**Green Hill Point.**"

Add road between *Indian Cedar Swamp* and *School House Pond,* in Charlestown.

Add name "*Deep Pond,*" south of *School House Pond.*

Change "**Shemunkanug Hill**" to "**Shemunkanuc Hill,**" in Charlestown.

Change "Quonochontaug" to "Ocean View," and add "Quonochontaug" further east, post offices in Charlestown.

Change "*Ninigret Pond*" to "*Charlestown Pond.*"

Prolong road at **Quonochontaug Beach.**

Add piece of road at Niantic.

Change name "*Poguiant Brook*" to "*Poquiant Brook.*"

Hydrography Plate—(Blue).

Fill out brook through swamp, south of *Larkins Pond.*

Connect ponds near 40′ meridian, on northern margin of sheet, with *Meadow Brook.* and disconnect with *White Brook.*

Fill out *Cedar Swamp Brook,* through swamp, south of Wood River Junction.

Fill out brook through swamp to river, northwest part of sheet.

Remove portion of swamp between *Indian Cedar Swamp* and *School House Pond,* in Charlestown.

STONINGTON SHEET.

Public Culture Plate—(Black).

Add name "*Ashaway River.*"

Adjust road opposite "Niantic," on Charlestown sheet.

Make broken line for State boundary, southern part of Westerly village.

Insert name "Pawcatuck," opposite Westerly, in Stonington.

Add piece of railroad track at Stonington.

Add road at **Noyes Beach.**

Hydrography Plate—(Blue).

Add brook through swamp, south of Ashaway.

Connect *Tomaquag Brook,* in two places, through swamp; also continue another brook, east of its mouth.

Add brook through marsh to *Chapman Pond.*

Add brooks flowing through marsh into *Pawcatuck River,* east of *Chapman Pond.*

Block Island Sheet.

Public Culture Plate—(Black).

Add name "Block Island," post office.

Add words "Range Lights" and two stars.

Make S. E. Light and N. Light both larger.

Hydrography Plate—(Blue).

Change slightly canal connecting *Great Salt Pond* with the ocean.

County Map.

(Scale $\frac{1}{250000}$.)

Public Culture Plate—(Black).

Inclose "Boston & Providence R. R." in parentheses, and prefix "Old Colony R. R."

Change name "Woonsocket" to capitals.

Add name "MASSACHUSETTS;" also "WORCESTER" and "NORFOLK," counties in Mass.

Change "Prov. and Worcester R. R." to "N. Y. P. & B. R. R., Worcester Div."

Add name and location of "Lonsdale" and "Valley Falls."

Add name "East Providence."

Change name "Cedar Grove" to "Riverside."

Add name and location of "Slatersville."

Add new railroad between Woonsocket and Pascoag, and name "N. Y. & N. E. R. R."

Change name "Graniteville" to "Harrisville."

Erase name and location of "Hunter."

Inclose "Providence and Springfield Railroad" in parentheses, and add "N. Y. & N. E. R. R."

Change name "Scituate" to "North Scituate."

Erase name and location of "Clayville," and add name and location of "Rockland."

Inclose "Prov. Warren & Bristol R. R." in parentheses; add "O. C. R. R.;" and erase words "Fall River & New Bedf."

Add name and location of "Barrington," "Tiverton," and "Little Compton."

Erase name "River View."

Add "s" to name "Buttonwood."

Change name "Harris" to "Phenix."

Add name and location of "Hope" and "Washington."

Add name "CONNECTICUT."

Change name **"Graves Pt."** to **"Brentons Pt."**

Add name "Peacedale."

Erase name and location of "Plainville" and "Potter Hill."

Change name "*Charles R.*" to "*Pawcatuck R.*"

Erase name "Stillmanville."

Add "(Newport Co.)" to **"Block I."**

Add names "ATLANTIC OCEAN" and "BLOCK ISLAND SOUND."

Hydrography Plate—(Blue).

Change *Sneech Pond* outlets, to correspond with Providence sheet.

Fill out brook northeast of *Sneech Pond*, near railroad, south of 42° parallel.

Fill out *Abbotts Run*, southeast of *Sneech Pond.*

Erase connection between *Cranberry Pond* and *Abbotts Run*, and connect *Abbotts Run* and *Blackstone River*, as on Providence sheet.

Connect *Leonards Pond* and *Moshassuck River*, as on Providence sheet.

Connect three brooks with *Branch River*, south of 42° parallel, west of Slatersville. (Change made after atlas sheets were printed.)

Connect *Moswansicut Pond* and *Moswansicut River*, as on Burrillville sheet.

Connect parts of *Cunliffs Pond.*

Connect brook with *Pawtuxet River*, at Natick.

Connect *West Meadow Brook* with *Moosup River*, southwest of Rockland, south of 45′ parallel.

Connect *Queens* (or *Usquepaug*) *River* and *Miskiania Brook* with *Pawcatuck River*, southwest of West Kingston.

Connect *Chipuxet River* and *Larkins Pond* with *Wordens Pond*, south of West Kingston.

Connect ponds east of *Watchaug Pond.*

Number of Changes in Plates.

Franklin Sheet	5
Blackstone "	1
Webster "	1
Providence "	130
Burrillville "	11
Putnam "	3
Fall River "	17
Nar. Bay "	74
Kent "	25
Moosup "	7
Sakonnet "	9
Newport "	36
Charlestown "	34
Stonington "	13
Block Island "	5
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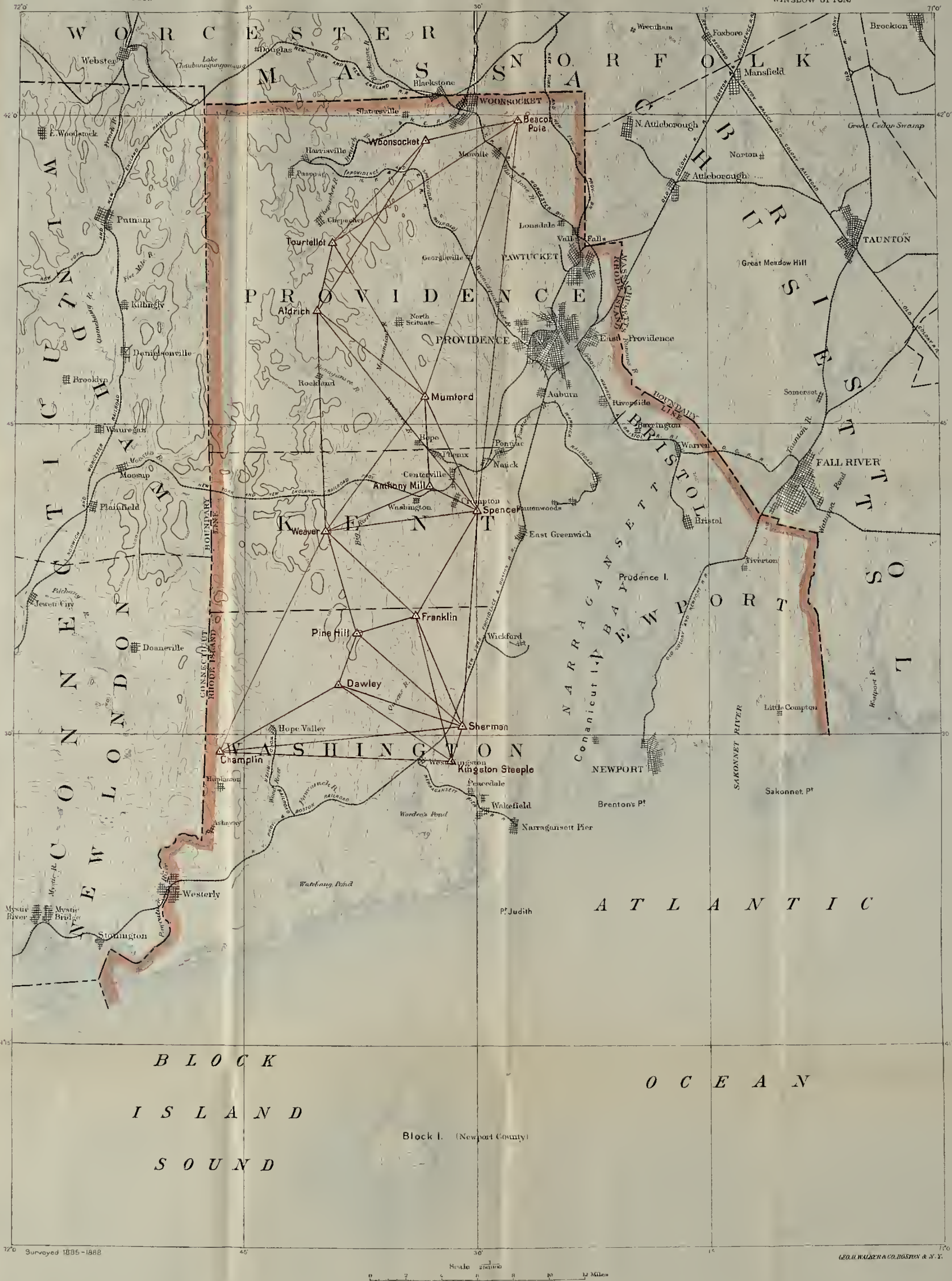
County Map	56
	427

U. S. GEOLOGICAL SURVEY
J. W. POWELL,
DIRECTOR.

RHODE ISLAND
TRIANGULATION MAP.

STATE OF RHODE ISLAND
DAVID W. HOYT,
JOHN W. ELLIS, } COMMISSIONERS.
WINSLOW UPTON,



Surveyed 1885-1888

Contour Interval 100 feet.

GEO. H. WALKER & CO. BOSTON & N.Y.

U.S. GEOLOGICAL SURVEY.
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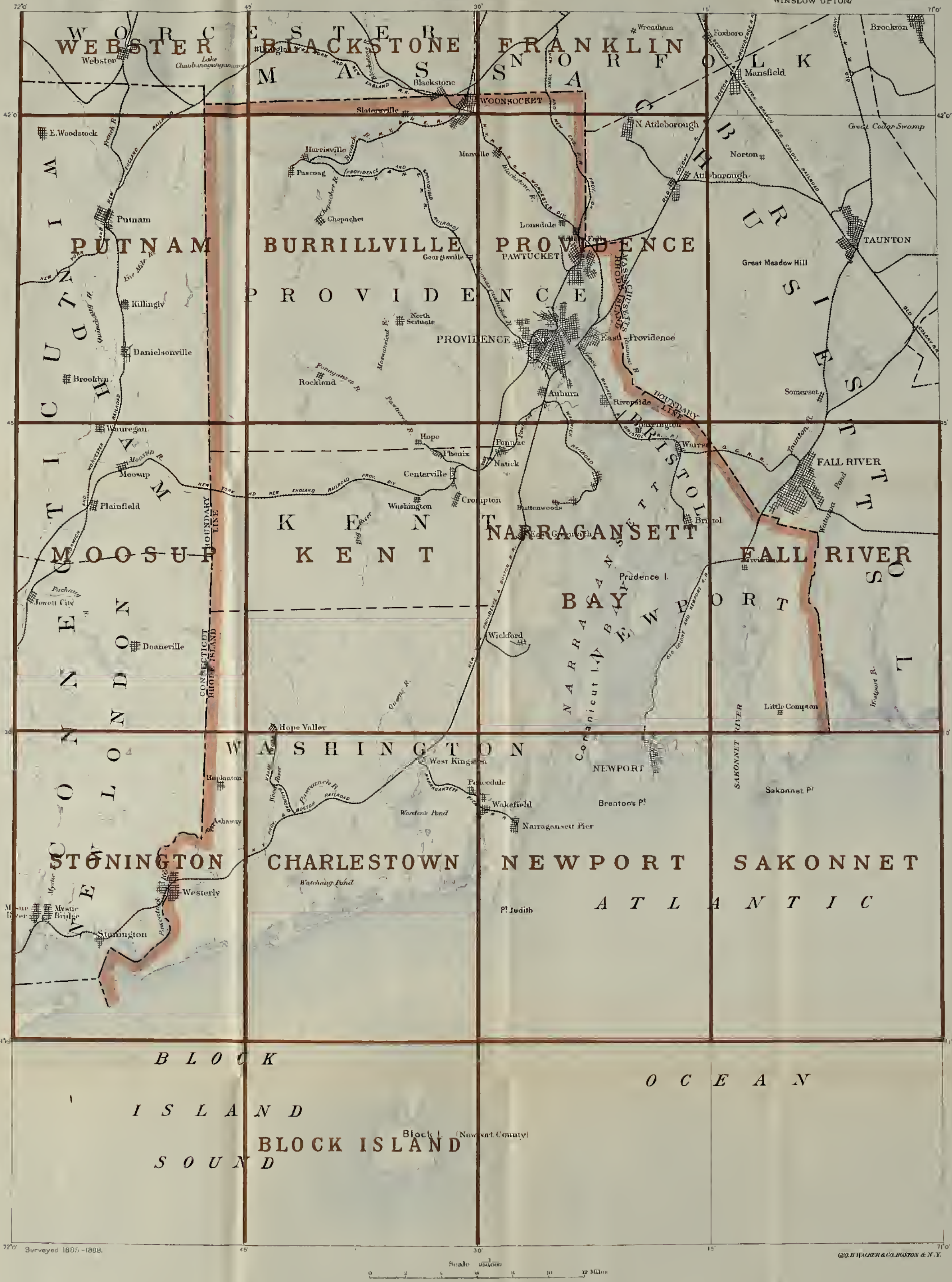
DIRECTOR.

RHODE ISLAND

INDEX MAP OF
U.S. GEOLOGICAL SURVEY SHEETS.

STATE OF RHODE ISLAND
DAVID W. HOYT,
JOHN W. ELLIS, } COMMISSIONERS.
WINSLOW UPTON.



Surveyed 1885–1888.

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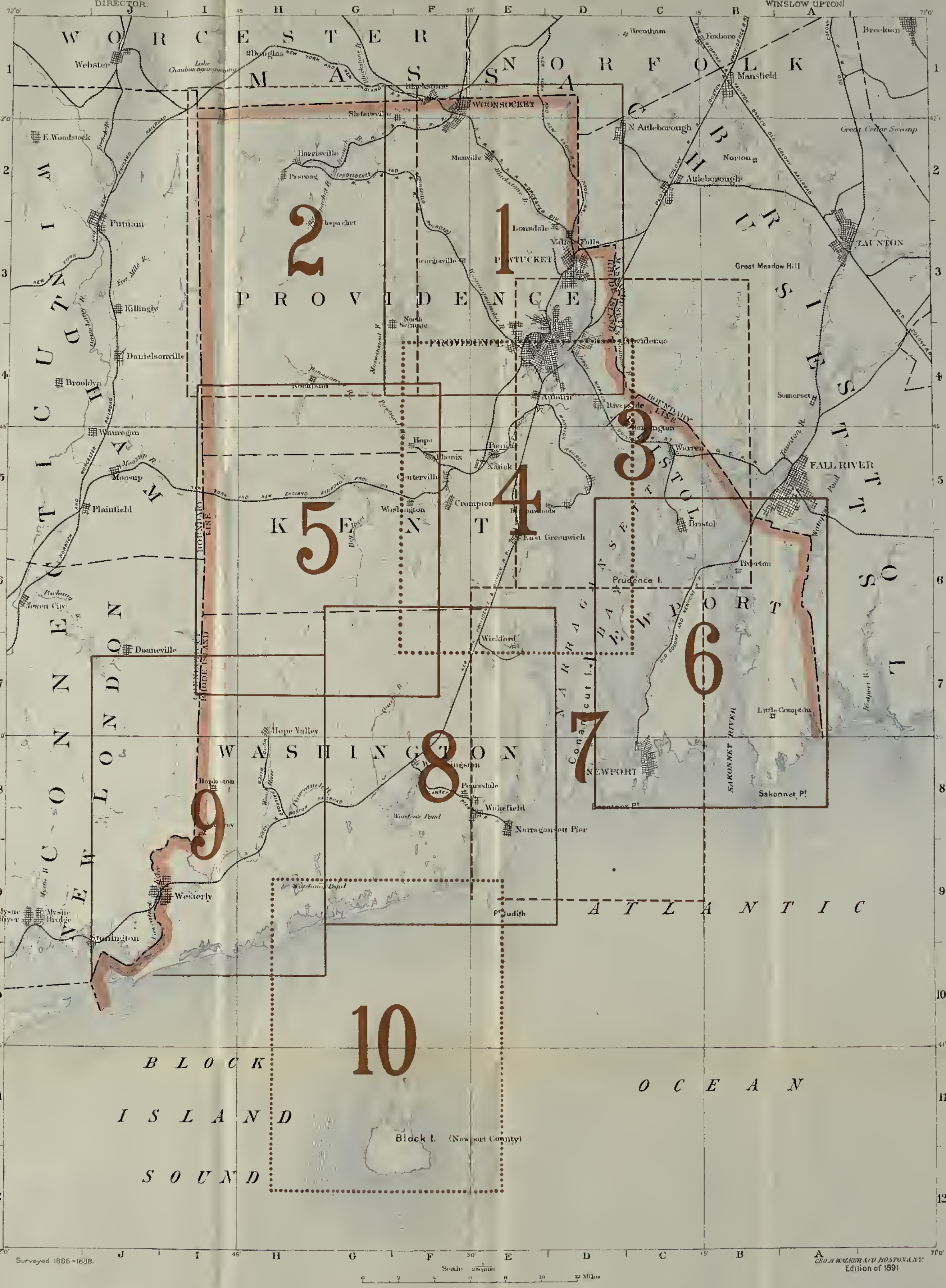
RHODE ISLAND
INDEX MAP OF ATLAS SHEETS.

STATE OF RHODE ISLAND
DAVID W. HOYT,
JOHN W. ELLIS, } COMMISSIONERS.
WINSLOW UPTON



Surveyed 1886-1888.

Scale 1/250000
0 2 4 6 8 10 12 Miles

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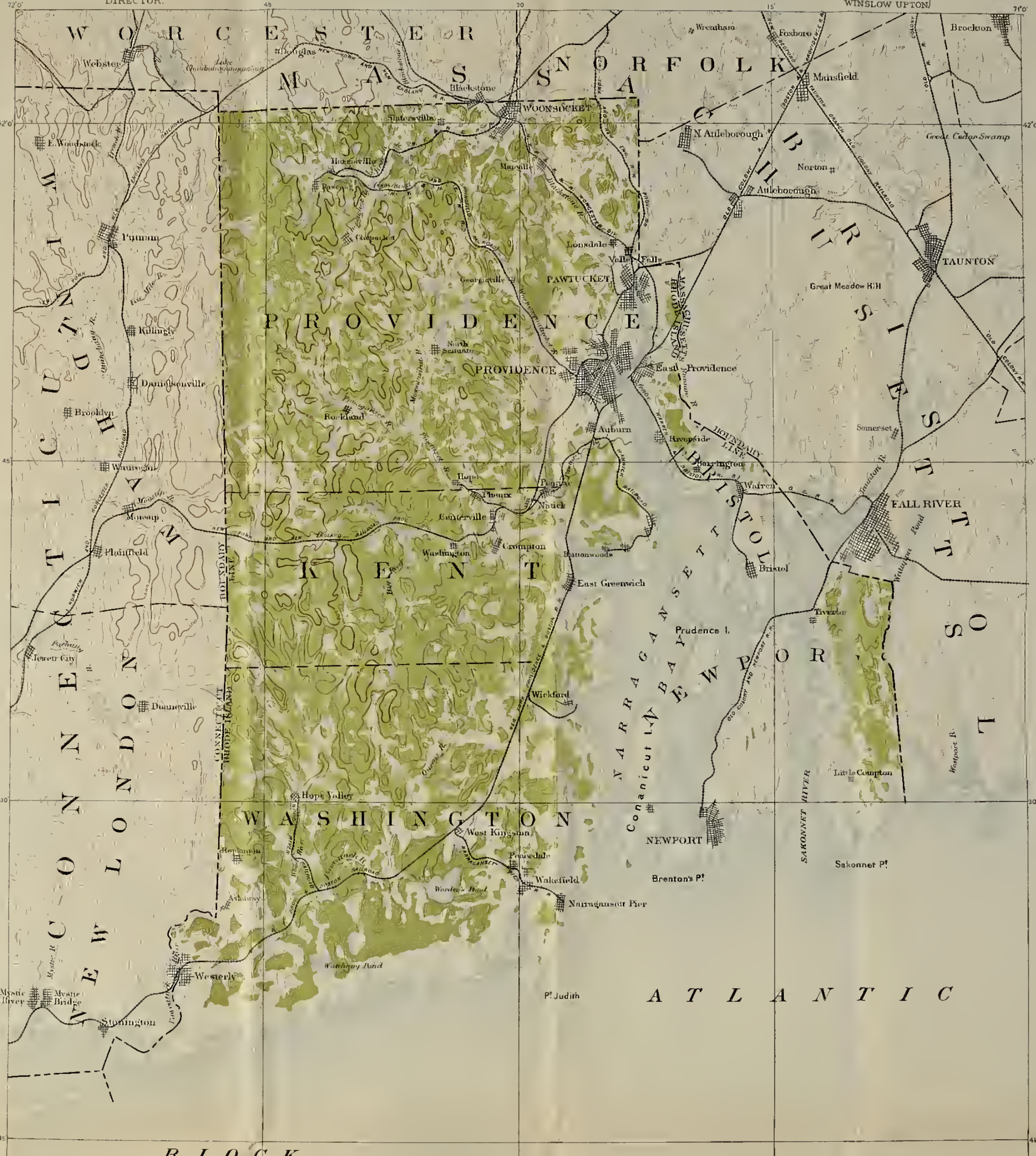
Edition of 1891

U.S. GEOLOGICAL SURVEY.
J.W. POWELL,
DIRECTOR.

RHODE ISLAND
WOODED AREAS.

STATE OF RHODE ISLAND
DAVID W. HOYT, }
JOHN W. ELLIS, } COMMISSIONERS.
WINSLOW UPTON. }



Surveyed 1885–1888.

Scale $\frac{1}{250000}$

0 2 4 6 8 10 12 Miles

Contour Interval 100 feet.

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